

RUSH UNIVERSITY



BULLETIN 1989-1990

RUSH-PRESBYTERIAN-ST. LUKE'S MEDICAL CENTER

Academic Calendar 1989-90

	X Courses	Y Courses	Z Courses
Orientation and Registration	September 7 - 8	September 7 - 8	
Fall Quarter Classes Begin	September 11	September 11	September 5
Classes End	November 17		
Examination Period	November 20 - 22		
Thanksgiving Holiday	November 23 - 24	November 23 - 24	November 23 - 24
Classes End		December 8	December 8
Examination Period		December 11 - 15	December 11 - 15
Winter Quarter Classes Begin	January 2	January 2	January 2
Classes End	March 9	March 9	March 9
Examination Period	March 12 - 16	March 12 - 16	March 12 - 16
Spring Quarter Classes Begin	March 26	March 26	March 26
Memorial Day Observed	May 28	May 28	May 28
Classes End	June 1	June 15	May 11
Examination Period	June 4 - 8	June 18 - 22	May 14 - 18
Commencement	June 9		
Summer Quarter Classes Begin	June 18		
Independence Day	July 4		
Classes End	August 21		
Examination Period	August 22 - 24		

Clinical Quarters in Medicine begin September 25, 1989, January 2, March 26, July 2, 1990

Academic Calendar 1990-91

	X Courses	Y Courses	Z Courses
Orientation and Registration	September 6 - 7	September 6 - 7	
Fall Quarter Classes Begin	September 10	September 10	September 4
Classes End	November 16		
Examination Period	November 19 - 21		
Thanksgiving Holiday	November 22 - 23	November 22 - 23	November 22 - 23
Classes End		December 7	December 7
Examination Period		December 10 - 14	December 10 - 14
Winter Quarter Classes Begin	January 2	January 2	January 2
Classes End	March 8	March 8	March 8
Examination Period	March 11 - 15	March 11 - 15	March 11 - 15
Spring Quarter Classes Begin	March 25	March 25	March 25
Memorial Day Observed	May 27	May 27	May 27
Classes End	May 31	June 14	May 10
Examination Period	June 3 - 7	June 17 - 21	May 13 - 17
Commencement	June 8		
Summer Quarter Classes Begin	June 17		
Independence Day	July 4		
Classes End	August 20		
Examination Period	August 21 - 23		

Clinical Quarters in Medicine begin September 24, 1990, January 2, March 25, July 1, 1991

X courses are offered by nursing and health sciences faculties

Y courses are offered by first-year medicine and graduate college faculties

Z courses are offered by the second-year medicine faculty

RUSH UNIVERSITY BULLETIN

1989-90

Rush-Presbyterian-St. Luke's Medical Center, Chicago

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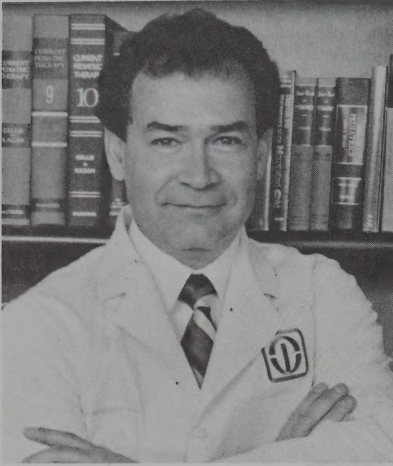
Rush University
600 S. Paulina Street
Chicago, Illinois 60612

Rush University **Degrees in the Health Professions** **1989-90**

Rush Medical College	Doctor of Medicine
College of Nursing	Bachelor of Science Master of Science Practitioner Programs Anesthesia Community Health Gerontology Neonatal Pediatric Clinical Specialist Programs Gerontology Home Health Care Medical/Surgical Oncology Parent/Child Health Psychiatry/Mental Health Rehabilitation Doctor of Nursing Doctor of Nursing Science
College of Health Sciences	Bachelor of Science Medical Technology Master of Science Audiology Clinical Nutrition Health Systems Management Medical Physics Occupational Therapy Speech-Language Pathology
The Graduate College	Master of Science Anatomical Sciences Pharmacology Radiological Sciences Doctor of Philosophy Anatomical Sciences Biochemistry Immunology Medical Physics Pharmacology Physiology Psychology

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"Rush-Presbyterian-St. Luke's is a major academic medical center on the national scene in a leadership position in many of its attributes and delivering the kind of care that is really second to none. It is within this environment of excellence and balanced emphasis on patient care, education, and scientific inquiry that future health professionals have the opportunity to grow in knowledge, understanding and skill."

*Leo M. Henikoff, M.D., President
Rush-Presbyterian-St. Luke's Medical Center*



GENERAL INFORMATION

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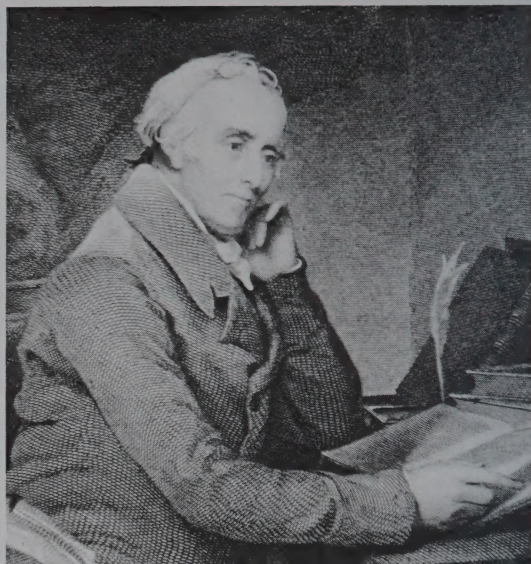
Medical Center Mission

The primary mission of Rush-Presbyterian-St. Luke's Medical Center (RPSLMC) is to improve the health status of a defined population through the development and operation of a voluntary health care system. This system is a multifaceted corporation that provides a full range of health care services, alternative financing arrangements, and organizational elements that are integrated through a single governance structure and through contractual relationships with other health care and educational institutions. High quality, compassionate, comprehensive health care services will be provided to a representative regional population and selected specialty services to a national population. New knowledge will be fostered and disseminated, and a broad spectrum of health manpower will be educated and trained through the system's academic component, Rush University. The full integration of the academic function with the health care function will reinforce the positive aspects of one on the other. The faculty and staff of Rush-Presbyterian-St. Luke's Medical Center will strive to achieve national and international leadership in setting standards of excellence in patient care, education, research and management. Rush-Presbyterian-St. Luke's Medical Center will maintain financial strength, effectively and efficiently manage resources, and be adaptive to the changing environment.

The Medical Center

Rush-Presbyterian-St. Luke's Medical Center is one of Chicago's oldest health care organizations. Its heritage extends back to 1837 when Rush Medical College was established. St. Luke's Hospital was founded in 1864 and Presbyterian Hospital in 1883. The merger of these pioneer institutions in 1969 created the present day Rush-Presbyterian-St. Luke's Medical Center, which includes:

- Rush University, a health professions higher education institution that enrolled 1,126 students in 1988-89.
- Presbyterian-St. Luke's Hospital, with 903 beds, a major referral center that provides primary care to its immediate community and secondary and tertiary care to patients from across the country. The hospital admitted more than 27,000 patients and performed over 18,000 operations the last fiscal year.



Rush University is named for Dr. Benjamin Rush, signer of the Declaration of Independence and the "Father of American Psychiatry"

- The Johnston R. Bowman Health Center for the Elderly, a short-term rehabilitation facility with 176 beds and a national model for hospital-based geriatric care. The center admitted 1,506 patients.
- Managed Care programs, including ANCHOR health maintenance organization with over 132,000 enrollees; ACCESS Health, an independent practice association; Rush Contract Care, a preferred provider organization that covered nearly 70,000 employees and dependents last year; and Occupational Health Centers, which served 2,000 employers with over 260,000 employees.
- ArcVentures, which develops and markets health care products and services, including Proactive Health, pharmacy services, home health, collection services, and others.
- Corporately affiliated with the Medical Center are Rush North Shore Medical Center in Skokie, Illinois, and Copley Memorial Hospital in Aurora, Illinois. Rush North Shore has 218 beds and Copley, 319 beds.

The Medical Center is the hub of a network of 14 hospitals and health care agencies in the Chicago area and in Indiana, and of an educational network of 16 colleges and universities in six states. (See Rush University Affiliations, p. 259.) Through its own programs and in conjunction with its affiliated institutions, the Medical Center is the central initiating component of a comprehensive cooperative health organization. This network includes:

Associated Institutions

Christ Hospital and Medical Center, Oak Lawn, Illinois; 873 beds

Affiliated Institutions

Bethany Hospital, Chicago, Illinois 212 beds

Central DuPage Hospital, Winfield, Illinois 371 beds

Elmhurst Memorial Hospital, Elmhurst, Illinois 455 beds

Galesburg Cottage Hospital, Galesburg, Illinois 265 beds

Grant Hospital of Chicago, Chicago, Illinois 500 beds

LaGrange Memorial Hospital, LaGrange, Illinois 276 beds

LaPorte Hospital, LaPorte, Indiana 227 beds

MacNeal Hospital, Berwyn, Illinois 427 beds

Marianjoy Rehabilitation Center, Wheaton, Illinois; 100 beds

Mile Square Health Center, Inc., Chicago, Illinois, over 56,000 registered outpatients

St. Mary's Hospital, Streator, Illinois 248 beds

Swedish Covenant Hospital, Chicago, Illinois 352 beds

West Suburban Hospital Medical Center, Oak Park, Illinois; 374 beds

The University

Rush University is the academic component of Rush-Presbyterian-St. Luke's Medical Center. Founded in 1972, the University has expanded from one college and fewer than 100 students to four colleges and over 1,100 students. It includes Rush Medical College, the College of Nursing, the College of Health Sciences, and The Graduate College.

Rush Medical College, chartered in 1837, opened officially on December 4, 1843, with 22 students enrolled in a 16-week course. During the first century of operation more than 10,000 physicians received their training at Rush. Rush Medical College was affiliated with The University of Chicago from 1898 until 1942, when

the medical college temporarily suspended its educational program though it continued its corporate existence. Its faculty continued undergraduate and graduate teaching of medicine and the biological sciences as members of the faculty of the University of Illinois. The charter of the medical college was reactivated in 1969 when it became part of the Medical Center, and, in 1971, it reopened with a class of 66 first-year students and 33 third-year students. First-year class size reached its projected maximum of 120 in 1976.

The College of Nursing represents a combined heritage dating back to the late nineteenth century when its first antecedent, the St. Luke's Hospital Training School of Nursing, opened in 1885 to offer diploma education to nurses. In 1903 the Presbyterian Hospital School of Nursing accepted its first students and from 1956 to 1968 nurses were taught at the merged Presbyterian-St. Luke's Hospital School of Nursing. Before the establishment of the College of Nursing in 1972, more than 7,000 nurses had graduated from these three schools. Currently, approximately 200 baccalaureate, master's and doctoral nursing students graduate each year.

The College of Health Sciences, established in 1975, traces its origins to the School of Medical Technology, sponsored by Presbyterian-St. Luke's Hospital from 1959 to 1972. This school was the second largest of its kind in the city of Chicago. During its operation, it provided a one-year professional internship program to more than 200 baccalaureate students in medical technology. Today, the College of Health Sciences offers six programs at the master's level in addition to the bachelor's program in medical technology.

The Graduate College was established as a separate academic unit in January, 1981 having previously been organized as the Graduate School within the College of Health Sciences. The Graduate College is responsible for educational programs in the basic sciences and offers the master's degree in three disciplines and the doctoral degree in seven.

Student Characteristics. In 1988 students ranged in age from 19 to 60, with undergraduates averaging 25 years; graduates, 32 years; and professional students, 27 years. Over 80 percent of the students lived in Illinois prior to entering Rush. The 1,124 students, include 24 Hispanic, 110 Asian/Pacific Islander, 55 Black/Non-hispanic, 3 American Indian and 29 foreign students.

The Philosophy

The University was established in response to demands for a more effective and humane health care system that could supersede highly specialized, fragmented and often geographically inaccessible patient care services. The Rush System for Health, the conceptual framework adopted to address these problems, offers a prototype that could become a model for the delivery of health care in this country.

This system is unique in many ways. A central concept is that the academic and care elements of health delivery systems must be united. The implementation of this concept differentiates Rush from many typical health universities. First, at the foundation of the University is an outstanding patient care setting. Presbyterian-St. Luke's Hospital is recognized as one of the top 20 hospitals in the country; its existence as a high quality patient care institution made the development of the University feasible. Most faculty and students have clinical responsibilities in this setting or in one of the institutions linked to Rush-Presbyterian-St. Luke's Medical Center. Therefore, faculty function both as clinicians and as teachers. This combination ensures that faculty members bring up-to-date knowledge to the clinical setting while transmitting professional expertise in the classroom.

Another distinctive feature of Rush University is its commitment to health maintenance and illness prevention. Traditional approaches to health care delivery are based on giving care to the seriously ill. Today, only about twelve percent of the population requires such care. At Rush the focus in the classroom is on pathology and prevention of disease. This is supplemented

by clinical experiences with inpatients and outpatients.

Programs of Study

Rush University confers the bachelor of science (B.S.), master of science (M.S.), doctor of nursing (N.D.) doctor of nursing science (D.N.Sc.), doctor of medicine (M.D.) and doctor of philosophy (Ph.D.) degrees. Within the undergraduate nursing program, an R.N. completion option meets the needs of registered nurses for a university education. Both baccalaureate programs (nursing and medical technology) begin in the junior year of study after completion of two years of course work at other accredited colleges or universities.

Master of science programs are offered by the College of Nursing, College of Health Sciences, and The Graduate College. The College of Nursing has concentrations in anesthesia, community health, gerontology, home health care, medical/surgical, neonatal, oncology, pediatric, parent/child health, and psychiatry/mental health. In the College of Health Sciences, a student may major in audiology, clinical nutrition, health systems management, medical physics, occupational therapy, or speech-language pathology. Master's degree programs in anatomical sciences, radiological sciences, and pharmacology are offered by The Graduate College.

Doctoral programs include the doctor of nursing, doctor of nursing science, doctor of medicine, and the doctor of philosophy. Students in The Graduate College may concentrate in anatomical sciences, biochemistry, immunology, medical physics, pharmacology, physiology, and psychology. A number of students enroll in concurrent M.D./Ph.D. programs.

Equal Opportunity Policy

Rush University encourages and gives full consideration to all applicants for admission and financial aid regardless of race, sex, religion, color, national origin, age, or handicap. The University is committed to attracting candidates who will help to make the population of health care professionals more representative of the national population. The equal opportunity coordinator for academic affairs has been designated to implement these policies. The equal opportunity coordinator may be contacted by telephone at (312) 942-7093 or by mail (room 764-A, Academic Facility).

Fall 1988 Enrollment	Men	Women	Total
Rush Medical College	287	196	483
College of Nursing	24	357	381
College of Health Sciences	22	120	142
The Graduate College	43	22	65
Unclassified	9	44	53
TOTAL	385	739	1124

Policy on Harassment

Rush-Presbyterian-St. Luke's Medical Center has adopted policies and procedures on harassment for the University and nonacademic sectors of the institution. These policies and procedures are intended to emphasize the Medical Center's longstanding commitment to preventing harassment and to focus on the internal resolution of any complaints.

Under these policies and procedures the more familiar category of sexual harassment as well as harassment related to race, color, religion, national origin, ancestry, age, marital status, physical or mental handicap, and unfavorable discharge from military service are prohibited. The provisions include protections for and prohibit retaliation against an individual making a complaint or supplying information about a complaint; they also incorporate protections for a person who considers himself or herself falsely accused. Inquiries or complaints of harassment from students, residents or faculty members will be handled in a strictly confidential manner through the Office of the Equal Opportunity Coordinator for Academic Affairs or the director of the Student Counseling Center. Every effort will be made to resolve a complaint informally, but procedures have been established for a formal hearing if that is necessary or preferred.

Copies of the Policies and Procedures on Harassment are available from the Office of the Equal Opportunity Coordinator for Academic Affairs (room 764-A, Academic Facility). If you have any questions regarding the matter of harassment, please get in touch with either the equal opportunity coordinator for academic affairs at (312) 942-7093 or the director of the Student Counseling Center at (312) 942-3687.

Research

Research expenditures totaled more than \$17 million last year. The faculty of the University encourages investigation of both the normal and disease processes and the distribution of the delivery of health care services. The faculty believes that inquiry into these areas by students should be encouraged if they are to become practicing professionals who will continue to learn throughout their careers. All research studies conducted at Rush-Presbyterian-St. Luke's Medical Center are listed in a research

report published annually by the Office of Research Administration.

Accreditation

- Rush University is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools, the regional accrediting association.
- Rush Medical College is accredited by the Liaison Committee on Medical Education of the American Medical Association and the Association of American Medical Colleges.
- Graduate medical education is accredited by the Accreditation Council on Graduate Medical Education.
- The College of Nursing is accredited by the National League for Nursing.
- The anesthesia nursing program is accredited by the Council on Accreditation of Educational Programs for Nurse Anesthesia.
- The clinical pastoral education (CPE) program is accredited by the Association for Clinical Pastoral Education.
- The health systems management program is accredited by the Accrediting Commission of Education for Health Services Administration.
- The medical technology program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences for the American Medical Association's Committee on Allied Health Education and Accreditation.
- The occupational therapy program is accredited by the American Occupational Therapy Association for the American Medical Association's Committee on Allied Health Education and Accreditation.

Authorization

- The State of Illinois Board of Higher Education has authorized all degree programs offered through Rush University.

Licenses

- Department of Public Health, State of Illinois
- Cook County Board of Health

Memberships

- Association of American Medical Colleges
- North Central Association of Colleges and Schools
- Federation of Independent Illinois Colleges and Universities
- American Society of Allied Health Professions
- National League for Nursing
- American Hospital Association
- Illinois Hospital Association
- Chicago Hospital Council
- American Association of Colleges of Nursing
- Blue Cross/Blue Shield Health Care Service Corporation



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Academic Computing Resources

Rush University is a leader in using computers in health care education, and it continues to improve and increase its computer options. By spring 1986, Rush University students, faculty, and staff were spending over 2,000 hours a month on academic computing resources' (ACR) 24 PLATO terminals and five personal computer dial-ups. Since 1981, over 1,000 faculty and staff and 2,000 students have received personal introductions to computer-based instruction on PLATO and to over 850 programs in health sciences. They have also explored business and educational microcomputer applications on ACR's IBM PCs. Use of the microcomputers has grown to over 400 hours per month. Rush runs a project that will allow an IBM PC to emulate PLATO.

Microcomputers, printers, and a library of software are available for student use for word processing, data analysis, or special projects in our IBM/MAC PC room. Dot matrix printers, a laser printer, and plotter are available.

The computer classroom serves as a computer literacy center. Magazines, product announcements, on-line tutorials, and access to traditional and electronic bulletin boards are available.

PLATO terminals access a printer for copies of electronic notes, the results of statistical analyses and screen copies.

The faculty has been actively involved in the development and use of computer material. In cooperation with ACR, faculty members have developed a library of 60 programs (over 80 hours of computer-based instruction) and ten large banks of computerized self-assessment test items. An electronic logbook for clinical tracking and tailored testing has been implemented in the internal medicine clerkship program. The tracking system is expected to strengthen the management and operation of clerkship and residency programs.

A summer development program provides opportunities for students and faculty to become involved with instructional computing. Academic computing hires students, teaches them to program and matches them with faculty who are interested in using computers in their courses. Instructional design and programming support are available to the projects. Students have an opportunity to learn about computing, work closely with faculty, and review curricular material.

Students enjoy "Rushtalk," a student-only PLATO notefile in which issues are discussed, tales are spun, and future events are announced. All students have access to electronic games on PLATO during the late night hours.

Academic Skills Center

The Academic Skills Center offers individual counseling and workshops to students who wish to improve their study and learning skills. The staff helps students improve their time management, textbook reading, note taking, test taking, writing of term papers and dissertations, and related skills. Students for whom English is a second language may gain assistance with quantitative skills, reading, and writing. Reading, learning strategies, and test anxiety assessment are available.

The center works closely with the other academic resources of the University and serves as a contact point, referring students to other support services, including content area tutors.

Student contacts with the center are confidential and no information will be released to another person or office without the prior written consent of the student.

Individual consultation is available Monday through Friday between 9:00 a.m. and 4:00 p.m. on a walk-in basis, by faculty referral or by appointment. Group sessions can be arranged when necessary. Center staff will offer workshops on selected study skills as requested throughout the year. These workshops will be advertised through various campus media.

All services of the Academic Skills Center are provided at no cost to the student.

Alumni Relations

The Office of Alumni Relations is located in the 1700 W. Van Buren Building. It has been established to provide a planned, coordinated program of service and activities of mutual interest and benefit to Rush University, the Medical Center and all alumni.

Although Rush University, founded in 1972, is a relatively young institution, it has already conferred more than 4,000 degrees in the health professions since its inception, and this dynamic growth continues.

The objectives of the alumni relations office are to provide channels for alumni of Rush Medical College, the College of Nursing, the College of Health Sciences, The Graduate College, and the House Staff to remain informed of current developments at the Medical Center; develop an active interest in and involvement with their alma mater; maintain contact with fellow alumni and faculty; take advantage of continuing education opportunities offered through Rush University; respond positively through both financial and philosophical support and promote and perpetuate the high standards of excellence in patient care, education and scientific advancement consistent with the

objectives of Rush-Presbyterian-St. Luke's Medical Center.

Formally organized alumni associations exist for graduates of Rush Medical College, the College of Nursing, and the Department of Health Systems Management. As the numbers of alumni increase from the other programs, organizational efforts are being undertaken for them as well. For more information concerning membership in one of the existing alumni associations or services available through the alumni relations office, call (312) 942-7165.

Alumni Associations

Rush Medical College. The Alumni Association of Rush Medical College is an active organization dedicated to supporting the educational goals of the college. Purposes of the organization are to maintain communications between alumni and the college; to honor alumni who have given distinguished service to the profession of medicine and/or to their alma mater; to promote and encourage the highest standards of medical education; to assist the faculty and staff of the college in any way possible and to provide financial support for the operation of Rush Medical College.

Prior to its reactivation in 1969, Rush Medical College conferred 10,976 doctor of medicine degrees. Alumni and Trustees of the Medical Center were responsible for keeping active the original charter granted to the college by the State of Illinois in 1837. The alumni also maintained the Rush Medical College Library and made financial grants for postgraduate education during the college's inactive period. Rush alumni practice in all 50 states and in 11 foreign countries. Since the reactivation of Rush Medical College in 1969, Rush University has conferred over 1,400 doctor of medicine degrees.

The Alumni Association is represented on the Board of Trustees of Rush-Presbyterian-St. Luke's Medical Center by two alumni who are elected annually, the president and immediate past-president of the Alumni Association.

College of Nursing. The Rush-Presbyterian-St. Luke's Nurses Alumni Association is an active organization with the following goals: to unite the graduates of Rush University College of Nursing, Presbyterian-St. Luke's Hospital School of Nursing, Presbyterian Hospital School of Nursing, and St. Luke's Hospital School of Nursing for mutual assistance, protection and preservation of fellowship; to promote the professional and educational advancement of

nursing and to support the interests of Rush University programs in nursing.

All graduates of these schools of nursing are considered active members of the Alumni Association. Each year, graduates return at Homecoming to tour the facilities and to learn what is happening at the Medical Center. From 1887 through 1968 there were 7,221 graduates of the diploma programs of the various schools. Many of them have served with distinction around the world. Since the founding of the College of Nursing in 1972, Rush University has conferred over 2,000 nursing degrees.

Many alumni support the Rush University nursing programs financially through the Golden Lamp Society, which provides leadership gifts to the college.

The association also gives an annual award to the outstanding graduate of the College of Nursing.

College of Health Sciences. The Alumni Association of the Department of Health Systems Management program is dedicated to the following goals: to advance knowledge and techniques in the field of health systems management; to maintain interest in potential and enrolled students; to facilitate graduate participation in continuing education activities; to provide objective recommendations for the development of the program; to provide opportunities for graduates to share their work experiences with students and other alumni and to serve as a network for job search and career advancement.

The first class of ten students graduated in June, 1981. Since that time the Alumni Association has grown to 74 members. An annual meeting and reception is held in conjunction with the Health Systems Management National Invitational Symposium on Hospital and Health Affairs.

Rush Surgical Society. This society recognizes the many surgeons who have been trained at the Medical Center but who may not have been graduates of Rush Medical College. Members automatically include all past, present and future trainees and faculty who have participated in a surgical laboratory, surgical clinical program or both.

The society's purpose is to support the Medical Center by promoting educational, scientific, and social aspects relating to surgery.

Medical Society. An equivalent group was established in medicine called the Rush Internal Medicine Alumni Association. This society was officially launched April 1987. The society's purpose is to facilitate contact and

communication among former internal medicine house officers and to honor alumni who have given distinguished service to the profession of medicine.

Biomedical Communications

The Department of Biomedical Communications provides media production and technical services for patient care, education, and research. Offices are located on the fourth floor of the Academic Facility with the exception of the Communications Skills Center, which is on the fifth floor.

Medical Photography creates photographic prints, slides, transparencies, photomicrographs, and motion pictures. The staff of scientific photographers offers a variety of services from the creation of visuals for classroom use to visuals that appear in national and international publications and conferences.

Medical Illustration and Design creates visual material to facilitate communication of both simple and complex medical health care information. The section is available to produce a broad range of illustration styles including realistic anatomical/surgical renderings, abstract graphics, nonmedical illustration and cartoons. Graphic design services are available for coordinating and producing brochures, logos, exhibits and promotional materials. In addition, computer generated art is available for multi-colored slides as well as black and white publication quality charts and graphics.

Media Services provides a wide variety of projection and technical support; the production of media programs in television, slide/tape, and audio formats; consulting and training in the design and use of media systems; and courses in the design and production of media programs within Rush University. The section operates the Communication Skills Training Center and the Rush Television Network including the Patient Information Network, Professional Education Network, Surgical/Pathology Television System and the Video Conference Network.

Campus

The Medical Center now consists of 22 buildings on the 35-acre main campus, Rush North Shore Medical Center in Skokie, and Copley Memorial Hospital in Aurora. The main campus includes patient care, education, and research facilities. Many of the buildings are connected by bridges or tunnels that permit inside travel to most facilities. Classrooms are located in the Academic Facility and Schweppe-Sprague Hall. Various other

buildings have conference and seminar rooms. Specialized research laboratories are located primarily in Jelke as well as in Rawson, the Academic Facility and Schweppe-Sprague Hall. An office building is located north of the Eisenhower Expressway on Paulina Street.

Student life is centered in the Academic Facility and Schweppe-Sprague Hall. A few student dorm rooms are in Schweppe-Sprague Hall. The first floor of Schweppe-Sprague Hall houses the associate dean for student services, college admissions services and affiliated college programs, registrar, student financial affairs, financial aid, and a large auditorium where most large-group, cocurricular events for students are held. The Office of Student Affairs and a student lounge are located on the lower level.

The Rush University Bookstore is on the first floor of the Academic Facility and the Medical Center cafeteria is on the second.

The Office of Student Affairs distributes a campus map to new students and publishes a student handbook annually. The handbook includes a yellow pages section that provides locations and telephone numbers of people, offices, departments and buildings of interest to students.

Counseling Services

Open all year, the Student Counseling Center provides professional counseling, at no charge to students, for a variety of concerns ranging from academic problems to issues of personal development. Students have sought help for test anxiety, insomnia, study difficulties, career questions, eating disorders, parenting concerns, general anxiety, depression, and marital and/or relationship problems. In addition to counseling of individuals and couples, the center offers group and workshop experiences. The center has offered ongoing support groups for male nursing students, first-year medical students and students with compulsive eating problems; in addition, workshops on assertiveness training for medical school clerkships have been offered.

Another important service of the center is its peer counseling program. Peer counselors are students who are available to talk to any student in person, by telephone or via the PLATO computer system. Students volunteer to receive training in basic counseling skills at the beginning of each academic year. This peer counseling group, which comprises about 30 students from all colleges, meets regularly throughout the year for educational and social purposes.

The Student Counseling Center maintains

strict standards of privacy and confidentiality. No information on an individual student is released to anyone, inside or outside of the University, without the prior consent of the student. No student contact with the counseling center becomes a part of any other University record.

The office is located on the eighth floor of Schweppe-Sprague Hall.

Curriculum Development and Evaluation

The Office of Curriculum Development and Evaluation offers University courses in measurement, evaluation, and curriculum design. The office consults and lectures in areas related to curriculum planning and educational evaluation. Students, faculty, and staff are invited to contact the office for advice on design and execution of research studies or for assistance in one of the following areas:

- curriculum and instructional development, which includes activities such as refinement of objectives and syllabi, development of instructional strategies, and description of the instructional domain
- evaluative study of educational programs, which includes participant/observer course evaluation, test development and interpretation, comparison of instructional strategies, and faculty development
- research planning and implementation, which includes research design, questionnaire development, survey design, design of sampling plans, instrument validation, statistical analysis, and interpretation of results

Consultation is available for the development of proposals for education, research, and training grants. The office also maintains its own program of research activities. Occasionally staff members conduct research in health care education with professionals outside of Rush University.

General Educational Resources

The Office of General Educational Resources (GER) is responsible for providing students, faculty and staff with a wide range of services necessary for carrying out both laboratory and classroom instruction. GER's

management of the spacious, flexible facilities located on the seventh floor of the Academic Facility enables it to meet multiple needs for educational space, equipment and other support. In addition, GER manages the flexible classrooms located at the south end of the seventh floor and also operates the Quick Copy Center. The multidisciplinary laboratory complex consists of ten laboratory/classrooms and a central core demonstration area. Within the area are the electron microscope facilities and a small darkroom for scientific use by faculty and students. GER staff offers cardiopulmonary resuscitation and basic life-support training for individuals and groups. The office is responsible for providing microscopes and other scientific equipment for educational uses, including the microscope rental plan (see below).

The Quick Copy Center, located on the seventh floor of the Academic Facility, duplicates materials for educational purposes as well as general needs. A full range of services, including front and back copying, full color copying, electronic page formatting with graphics and typesetting, and multiple binding options are offered through the center. Special rates are available for student cooperatives and organizations. Personal work of over ten copies can be accommodated for faculty and students for a reasonable fee.

Students and faculty who have instructional needs that require special accommodations should check with the supervisor of general educational resources for assistance. GER space is routinely open 50 hours during the week for scheduled classes, noncurricular instructional activities and study. Teaching and learning aids can be made available upon request. Classroom space is usually open for study purposes from 5:00 p.m. to 8:00 a.m.

Microscope Rental. Students must have microscopes for medical technology, anatomy, and pathology courses. Students who do not own a microscope may rent one through Rush University (see Financial Affairs). A carrying case and an off-campus pass (valid for the duration of the rental period) are provided with each rental microscope. Since students will be held responsible for microscope damage and loss, homeowner's insurance might be considered.

GER provides lockers to store the microscopes and distributes major course syllabi and microscope slide sets to those lockers.

Learning Resource Center

The Chauncey and Marion Deering McCormick Learning Resource Center (MLRC) of the Library of Rush University, an audiovisual learning facility, houses an audiovisual media collection and provides on-site support equipment for its use. MLRC is designed to encourage independent study and self-enrichment and to provide access to reserve audiovisual materials. Seven rooms allow large and small group media viewing with either 16mm film, 3/4" videocassette, 1/2" VHS videocassette, videodisc, audiocassette, slide, or slide/audiocassette. Three of the rooms are connected to the Rush Television Network, the Medical Center's closed-circuit television patient education system. Another room houses 17 individualized slide/audiocassette carrels. MLRC staff is always available during service hours to help with equipment operation.

Primary purposes of MLRC are to build the audiovisual media collection and provide services for the Medical Center which include purchase, preview, rental, and interlibrary loan. The present media collection numbers 4,606 titles and is accessible by the Library Information System (LIS), the joint Library/MLRC on-line catalog, and by an annually revised holdings list. All media in the collection have been previewed and recommended for purchase by faculty. All

programs in the collection may be reserved in advance by faculty and students for use within MLRC or elsewhere in the Medical Center.

MLRC provides complete media reference services. The staff assists faculty and students in locating commercially produced media for use within their courses. This service includes consultation with Audiovisuals On-Line (AVLINE), the National Library of Medicine audiovisual data base, and compilation of media bibliographies from which faculty and students may select titles for preview.

MLRC provides free, portable electric typewriters and portable audiocassette recorders to students for overnight use.

MLRC staff will arrange individual and group orientations to departmental services upon request. Additionally, MLRC sponsors monthly showings of recent films of general interest to health sciences professionals.

Service hours are as follows:

Monday through	
Thursday	8:00 a.m.- 11:00 p.m.
Friday	8:00 a.m.- 6:00 p.m.
Saturday	9:00 a.m.- 6:00 p.m.
Sunday	8:00 a.m.- 7:00 p.m.

Hours may be shorter during vacation periods and in summer. The MLRC serves as a 24-hour study hall.



Library of Rush University

The Library of Rush University, although the oldest health sciences library in Chicago, maintains an up-to-date collection of books and journals that serve the entire University and Medical Center. The collection consists of 45,229 books, 50,266 bound serial volumes, and 2,303 current subscriptions. The most valuable and noteworthy works stemming from its early years are maintained in a Rare Book and Special Collection. Housed in an attractively furnished two-story area, the library has easy chairs, carrels and tables for studying or reading.

The reserve collection is in closed stacks behind the circulation desk. A staff of eight professional librarians and thirteen technical personnel is available to assist library patrons. Guided tours and an orientation to the library are available during registration periods and on request. The library schedules frequent classes for individuals and groups on the automated catalog and mini-MEDLINE systems. There are also classes on library research and end-user computer searching, tailored to meet the specialized needs of different departments. The Library Guide describes library services, circulation periods of books and journals, and hours of operation.

Patrons are encouraged to use the automated library catalog for information about books, journals, and audiovisuals. The catalog identifies items by subject, any word in the title, author, or year of publication. Information about the item--whether it is checked out or on the shelf, and where it is located in the library--is provided. An important feature of the automated catalog is the ability to find recent journal article references and abstracts by searching mini-MEDLINE. This abbreviated version of the National Library of Medicine's data base includes up to three years of 400 journal titles to which Rush subscribes.

Reference librarians provide assistance in locating and obtaining information and published materials. They also search computerized data bases. The computer search service is one of the most heavily used services of the library. Over 200 data bases are available covering the disciplines of biomedicine, health administration, humanities and general literature. These may be searched for information (i.e., chemical formulas or financial information about a company), references to published literature or the retrieval of journal article or book pages. There is a charge for computer connect-time and for the printout of bibliographic references or information. Rates, which vary by data base, are available in the Reference Office.

The library assists all patrons to locate materials not held by the Rush University Library. The library borrows materials from other libraries through a variety of local, state, and national networks. To obtain this service, patrons complete an interlibrary loan form, which is available in the library.

The collection reflects the informational needs of the University, faculty, and students as well as of the Medical Center staff. Collection development policies and decisions are continually reviewed. Suggestions regarding the collection or for specific new purchases are always welcome.

The library is open 92 hours a week with reduced hours during the summer and vacation periods.

Student Affairs

The Rush University Office of Student Affairs works to provide an atmosphere that will enhance students' academic experience. The student affairs staff works closely with students, faculty, and administration to identify areas of student need and to design and implement programs and policies to meet those needs. The office makes special attempts to sponsor cultural, social, and recreational activities that include students from all programs in the University.

Career Development. Each student is assigned an academic advisor who is a member of the faculty. The advisor is knowledgeable about the student's educational program and provides assistance in curriculum selection, academic progression, and professional and career development.

Within Rush Medical College, an assistant dean in the Office of Medical Student Programs has specific responsibility for providing counseling about specialty choice and applications for postgraduate residency positions.

Each year, the Office of Student Affairs sponsors a career fair to acquaint undergraduate students with a variety of job opportunities available at health care institutions. Additionally, Student Affairs offers assistance in resume writing and interview techniques and maintains resource materials to aid students in their job search. The office of Student Affairs also acts as the placement center for senior undergraduate students. Biographical data and recommendations are kept on file and sent out at the students' request.

Cultural and Social Activities. Representing the entire University, the Rush University Board initiates and sponsors activities of interest to all Rush University students. The major objective of

the board is to coordinate the cocurricular life of the Rush student community in conjunction with the University Office of Student Affairs.

In 1988-89, the board organized monthly "Thank God It's Friday" (TGIF) parties, The Mad Pumpkin Ball, the Beach Party, Open Mike Night, Brown Bag Extravaganza, and an ice cream party. Additionally, the board organized a film series as well as outings to the theatre and sporting events.

Membership on the board is open to any interested Rush University student. Students interested in serving on the Rush University Board or in participating in student activities are encouraged to contact the Office of Student Affairs in 023 Schweppe-Sprague Hall or to call (312) 942-6302.

Housing. Resident students live in Kidston House, Center Court Gardens and on two floors of Schweppe-Sprague Hall. All of these buildings are centrally located within the Medical Center. Individual units range from single occupancy dormitory rooms in Schweppe-Sprague Hall to two-bedroom apartments in Center Court Gardens that accommodate four students. When filled to capacity, current facilities meet the housing needs of more than 25 percent of the total student enrollment.

Application Process. Incoming medical students receive a housing application from the Rush Medical College Admissions Office after they have been admitted. Students applying for admission to other programs receive housing applications from the program directors as part of the admission process. Returning students may request a housing application from the Office of Student Services room 119, Schweppe-Sprague Hall.

Because on-campus housing is in great demand, the following set of priorities is followed by the Office of Student Services for assigning students to available units. Students in category number one receive the highest priority followed by those in category number two, etc.

1. Students who wish to retain their present University housing assignment for the following year.
2. Students who wish to change their present University housing assignment to a different unit for the following year.
3. Returning undergraduate students who would like to move into University housing.
4. Incoming undergraduate students from affiliated colleges.
5. Incoming undergraduate students from nonaffiliated colleges.

6. Incoming graduate and medical students who do not live in, and whose families do not live in the Chicago metropolitan area.
7. Returning graduate and medical students who live in, or whose families live in the Chicago metropolitan area.

These priorities will be used as a guide when assigning housing. Students must meet all established deadlines regarding the application process. A returning student living in University housing, for example, who fails to submit a housing application for the succeeding year by the published deadline will not retain his/her number one priority. In addition, other factors such as financial need, room availabilities or unique individual circumstances may be considered as exceptions. Thus, Rush University reserves the right to make exceptions to these priorities when extenuating circumstances exist.

As already stated, on-campus housing is in great demand. Consequently, to maximize available space, the following configurations will be used in the assignment process:

Schweppe-Sprague	One student
Kidston Single	One student
Kidston Efficiency	One student
Kidston One Bedroom	One student
Kidston One Bedroom	Married couple
Kidston Two Bedroom	Two students
Center Court Gardens	
Studio	One student
One Bedroom	One-two students
Two Bedroom	Two-four students

Notification of acceptance into University housing will be sent to each student assigned to on-campus housing. For students who wish to retain or change their housing assignments for the following year, that notification will take place approximately April 1 each year. Entering students must receive an acceptance for admission before any housing notification will be sent. Notification to entering students will begin approximately May first.

A lease will accompany each letter of acceptance into University housing. The lease, accompanied by a security deposit of one month's rent, must be signed and returned. Failure to return the lease and the security deposit by the specified deadline will result in the loss of the housing assignment. All inquiries regarding housing assignments should be directed to the Office of Student Services.

Rent is payable in equal quarterly installments. Students are billed for rent along with tuition and fees prior to the beginning of each quarter.

Consolidation Policy. In an effort to maximize the number of on-campus housing spaces available to Rush University students, some consolidation of tenants may occur. This consolidation policy will affect only those students who occupy an apartment by themselves that was originally leased to two or more students. Such a situation can occur when a roommate has left University housing during the course of the academic year.

If consolidation is necessary, students involved will be informed in writing. At that time the student will have the following options: share an apartment with another student in any campus building who is also in need of a roommate; find a Rush University student roommate of his/her choice; have a roommate assigned from the available applications or pay the full rent of the apartment.

If the fourth option is chosen, the apartment will become a single accommodation only through the end of the current lease. If the student wishes to renew the lease, the student will have the option of remaining in the apartment with the understanding that he/she will receive a roommate or will be given an opportunity to move to another available apartment.

After all apartments have been consolidated, any available apartments will be offered to students desiring housing. If compatible roommates are not available, a unit may be rented as a single accommodation at the full rental rate of the unit only until the end of the lease. At such time it will revert to multiple occupancy. Again, the student will have either the option of remaining in the apartment with the understanding that he/she will receive a roommate or the opportunity to move to another available apartment.

Students should address questions concerning the application process, assignment process, or roommate selection to Dr. William Wagner (telephone 312-942-6796). Questions regarding leases and maintenance should be directed to the Office of Property Management (telephone 312-942-6474).

Lockers. The University provides lockers for the storage of coats and books. New students receive locker assignments at orientation. Since the Medical Center assumes no responsibility for the loss of personal property from lockers, it is unwise to store valuables, such as purses or tape recorders, in the lockers. Additionally, students should be aware that all students share lockers. If any difficulties with a locker arise, contact the Office of Student Affairs.

Mailboxes. Campus mail is delivered to student mailboxes located on the seventh floor of the Academic Facility and the first floor of Schweppe-Sprague Hall. Since no United States mail is delivered to these mailboxes, arrangements should be made to have all personal mail sent to home addresses.

New students receive mailbox assignments at orientation and should check for mail daily because University personnel distribute dated material through this campus system. Since students are held responsible for meeting deadlines announced in the dated material, students who will be off campus for an extended period of time should make arrangements to have a friend forward campus mail. The Office of Student Affairs is not responsible for mail that accumulates during a student's absence.

Students may obtain interoffice mail envelopes from the Office of Student Affairs. Addressed envelopes may be returned to student affairs, the student mail basket at the receptionist's desk in Schweppe-Sprague Hall or deposited in the student mailbox located on the northwest wall of the mailroom on the seventh floor of the Academic Facility.

Recreation. Rush University students have the opportunity to utilize several facilities in the area for recreation, relaxation and physical conditioning.

- A jogging track (approximately one-fifth of a mile) surrounds four outdoor tennis courts next to the Atrium Building on the corner of Ashland Avenue and Harrison Street.
- An outdoor fitness cluster by Parcourse is located near the jogging track. The fitness cluster consists of four series of exercises located in four individual modules--one for stretching and three others that strengthen the major muscle groups. Illustrated panels in the center of the cluster provide detailed instructions.
- Rush University students may also use recreation facilities at the University of Illinois at Chicago. The south wing of the Circle Center and the Illini Center provide space for archery, table tennis, bowling, swimming, billiards, handball, racquetball, tennis, badminton, volleyball, weightlifting target practice, and jogging. Students presenting a valid Rush University identification card are eligible for admission at reduced rates. Schedules of the facilities, rates and hours of operation are posted in the Office of Student Affairs at Rush University.

Rush University Day. Rush University Day is an event held each year for all students and faculty. The purpose of Rush University Day is to bring the members of the Rush University community together. The class schedules enable students and faculty to participate in Rush University Day.

Student Organizations. Several student organizations are active at Rush. The Office of Student Affairs serves in an advisory capacity to these groups. A complete list of student organizations is available from student affairs. Students interested in establishing a new organization are encouraged to contact Student Affairs.

Student Representation. Student representation is unique to each college. Class committee and Faculty Council representatives comprise the Student Council of Rush Medical

College. The council's purposes are to increase communication among the four classes and to give students a combined, representative voice on issues that confront them. Elections for Student Council and several standing committees are held each November.

The Student Senate in the College of Nursing is comprised of students elected to the following committees: admissions and progression, curriculum, affirmative action, educational resources, faculty development, and faculty senate. In addition, course representatives are elected. Elections are held each fall and spring.

Students are elected to membership on the College Council in the College of Health Sciences and also serve on committees in individual programs. Students in The Graduate College elect two students to serve on The Graduate College Council.



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Registration

Credit Hours. Rush University is on a quarter system. Each quarter is at least ten weeks in length. An examination period is provided at the end of each term, and most classes give a final examination during this time.

The quarter hour is the unit used by the College of Nursing, the College of Health Sciences and The Graduate College to determine credit for courses taken. As a general rule one quarter hour represents contact time of one lecture hour, two hours of small group discussion or three laboratory or clinical hours per week.

Course credits are not calculated for Rush Medical College students. However, the number of weeks of clinical experiences appears on the transcript of the academic record.

Registration Process. Each quarter a timetable of classes is published by the Office of the Registrar for the subsequent quarter. Classes are filled on a first-come, first-served basis according to the following order of priority: continuing students, new students and unclassified students.

Required Signatures. Registration forms are processed only if the required signatures are obtained. Each graduate student and R.N. completion nursing student must obtain his/her advisor's signature. Registration for more than 16 credits for graduate nursing students or more than 17 credits for all others requires written permission from the program director. The nature of some course offerings may require the instructor's signature in addition.

Registration for Medical Students. Registration for preclinical studies is done administratively except for electives, including the minicourse series (BVH 473). Registration for clinical studies is done in the Office of Clinical Curriculum.

Confirmation of Registration. Registration is confirmed on student data sheets, which include courses in which the student is enrolled, billing, and financial aid information. Closed or cancelled courses are posted in the registrar's office. No message appears on the data sheet if the student did not get all requested courses.

Completion of Registration. Registration is complete only when tuition and other charges for the quarter are paid or satisfactory arrangements for payment are made. Registration for subsequent quarters is denied to students not cleared by the bursar. Tuition is due on the first day of the quarter. (See section on Financial Affairs.)

Unclassified Students. Persons desiring to enroll in a course may do so on a special *Unclassified Student Registration Form* obtained in the Office of the Registrar. The instructor's approval on the form constitutes approval for registration. An instructor is not obligated to accept any unclassified student in his/her class, and students without appropriate background take courses at their own risk. Payment of tuition is required before the forms are processed. The bursar will charge tuition at the rate applied to graduate students. However, neither instructor approval nor payment assures a place in the class, since students in degree programs have priority for enrollment in all courses. Therefore, unclassified student registration forms are processed only during the week immediately prior to the first day of classes. Notification is by mail. If an unclassified student cannot be accommodated in a class, a full refund of tuition will be mailed, usually within two weeks.

A student may accumulate no more than 12 quarter hours of academic credit as an unclassified student. These 12 hours, equivalent to a full-time one quarter course load, may be taken in one quarter or over a period of time. Registration as an unclassified student that results in more than the maximum number of hours (12) will be permitted if the dean (or his/her designate) of the college offering the course(s) has signed the registration form.

Credit earned as an unclassified student will not necessarily apply toward a Rush degree if the unclassified student is subsequently admitted to a degree program.

Pass/No Pass Option. The timetable indicates all courses that may be taken pass/no pass. One may register to take a course pass/no pass simply by putting an X in the P/N column on the registration form.

A student deciding to take a course pass/no pass after having initially registered should complete the *Pass/No Pass Option Form* available in the Office of the Registrar. This form may require the signature of the appropriate advisor and must be submitted by the second Monday of the quarter. The form may also be used to revert to the letter grade option.

All medical school courses are graded honors (H), pass (P) or fail (F).

Graduate students in nursing may take no more than 20 percent of their total graduate course credits under the pass/no pass option. Therefore, if a nursing student graduates with 55 quarter hours, he/she may take 11 hours pass/no pass; the student who graduates with 125 quarter hours may take 25 hours pass/no pass. Thesis and dissertation hours (NSG 598 and 699), which are graded only pass/no pass, are in addition to

the 20 percent limit.

Precandidacy research is graded P/N in The Graduate College. Divisional policies vary on the pass/no pass grading of other courses.

Independent Study. To register for independent study, students should complete the yellow and white *Independent Study Contract Forms* available in the Office of the Registrar. Health Systems Management students complete the yellow sheet and a separate form available in the Health Systems Management office.

The small yellow sheet must be returned to the Office of the Registrar during registration. It identifies the title of the independent study to be posted on the student's transcript, the preceptor's name and office location and the number of credits for the study. Since this yellow sheet is considered registration for independent study, an advisor's signature is required. All students, including undergraduates, must obtain the appropriate advisor's signature.

The second form is a long white sheet on which the objectives of the study are defined, a plan to meet those objectives is described, etc. It should be completed and approved by the preceptor, department chairperson and the program director no later than the first day of the quarter in which the independent study is to be taken. The student's preceptor keeps the contract.

Identification Card. Each student receives an identification card at matriculation. Each term the card is validated at the completion of registration. Registration is complete once satisfactory arrangements have been made for the payment of tuition and fees.

A valid ID card is needed for identification within the Medical Center complex, for use in the library and bookstore, to gain access to residence halls and for admission to some school events. The card must be worn at all times in the Medical Center. A clip or pouch is provided to display the card.

Lost or stolen identification cards may be replaced at the Office of the Registrar from 12:00 - 1:00 p.m. and 3:00 - 4:00 p.m. There is a \$5 fee for this service.

Drop/Add. The only way to change course registration is to complete a *Drop/Add Form* available in the Office of the Registrar. The official date of the drop/add action is the date that the drop/add form is processed by the Office of the Registrar. No courses may be dropped after the last day of classes. No withdrawals are allowed during the final examination period. Graduate students and R.N. completion nursing

students must obtain the appropriate advisor's signature before the form will be processed. Forms that must be returned for the advisor's signature will be sent through the campus mail.

Medical students wishing to change their clinical schedules must contact the Office of Clinical Curriculum at least four weeks before the start of the scheduled clerkship.

Withdrawal from School and Leave of Absence. Students may not merely quit going to classes. A formal withdrawal must be made, and the appropriate signatures obtained on the *Clearance Form* available in the Office of the Registrar. No withdrawals are allowed during the final examination period. Refunds are made only during the limits for refunds. (See Financial Affairs section.) This is also required of those going on leave of absence in addition to any requirement for applying for the leave as stated under specific program policies. This procedure assures that students do not obligate themselves for additional tuition, financial aid, and insurance. Insurance may be continued under certain conditions. Failure to complete the form makes the student ineligible for any refunds and the student incurs insurance charges for the full quarter.

Off-campus Concurrent Enrollment. Under special circumstances students may apply to take courses offered by another college or university as if they were Rush University courses. These courses are taken as integral parts of the student's curriculum either replacing required Rush courses or fulfilling special career or discipline objectives. Completion of the *Concurrent Enrollment Form* obtained in the Office of the Registrar, with the appropriate signatures, enables the Registrar to authorize payment of tuition at the other institution. Students, often with the help of their advisors, make their own arrangements to take a course at another institution, and they register at Rush for the appropriate hours of credit and pay the Rush tuition rate. Students must provide an official transcript from the other institution, and a grade for the course will be recorded on the Rush transcript.

Grades and Transcripts

Grade Report. A quarterly grade report is mailed each term to each student's local address as soon as grades have been recorded. Grades are usually mailed within five working days of the end of the examination period. Grades will not be issued over the phone or given to students who attempt to pick them up in person.

The quarterly grade report is the student's copy only, and it should not be accepted by an institution or agency in lieu of an official transcript.

Grading System

Grade	Quality	Grade Points
A	Excellent	4
B	Good	3
C	Satisfactory for undergraduates but may not be acceptable at the graduate level	2
D	Minimal pass for undergraduates and may not be acceptable at the graduate level in the College of Health Sciences. Not used at the graduate level in the College of Nursing, The Graduate College or Health Systems Management	1
F	Failure	0
P	Passing	
N	Not Passing	
H	Honors--Rush Medical College only	
W	Withdrawal prior to midterm	
WP	Withdrawal passing after midterm	
WN/WF	Withdrawal failing after midterm	
K	Credit earned through proficiency examination	
NR	Grade not reported by instructor	
I	Incomplete	
CC	Course Continues into the next quarter. Grade received at the end is then recorded for all terms covered by the course	
XX	Participation in an ungraded course or residency	

Rush Medical College uses honors (H), pass (P), and fail (F).

Academic Record. The permanent academic record is the student's official transcript that includes all course work taken at Rush University. External transcripts for medical students reflect the highest grade reported for each course at the time a transcript is requested. The academic record is maintained permanently in the Office of the Registrar.

Transcript Requests. Copies of the academic record may be obtained at no cost to the student or former student. These transcripts are released only with prior written consent of the student. Students may either complete a transcript request form or write the Office of the Registrar, 1743 West Harrison Street, Chicago,

Illinois 60612. The letter must include a handwritten signature of the student. Transcripts will not be released if the student has an outstanding financial obligation to the University. At least two days should normally be allowed for processing.

Requests by medical students for transcripts to be used in support of residency applications should be made to the Office of Clinical Curriculum of the medical college rather than to the Office of the Registrar.

Copies issued to students will be stamped in red ink "Issued to Student." All copies bear the signature of the registrar or his/her designate and the seal of Rush - Presbyterian - St. Luke's Medical Center.

Commencement.

Commencement Ceremony. Rush University commencement is held annually at the end of the spring quarter. The exact date for commencement is published in the academic calendar appearing in the timetables of courses and in the *Rush University Bulletin*. Students will be notified by the Office of Student Affairs concerning participation in the event. Students are expected to march in commencement exercises.

The Office of the Registrar asks students to specify how they want their names printed on their diplomas and in the commencement program. Students also will be asked to supply a forwarding address where mail can be sent after graduation.

Information regarding degree requirements, deadlines and eligibility to participate may be obtained from program directors. Generally students expecting to graduate at the end of the summer quarter may participate in the June commencement before completion of degree requirements. Students in programs requiring a thesis or dissertation may not participate until satisfying all degree requirements. Students whose academic plans change, making them ineligible to participate in the June ceremony, will be deleted from the commencement list for that academic year. However, they are then eligible to participate the following June should they successfully meet degree requirements.

During the ceremony, diplomas are given to students who have completed their programs, discharged their financial obligations to the Medical Center and returned all library books and other University property. Students will be notified of all outstanding obligations, and the Office of the Registrar will encumber the diplomas and transcripts of students until these obligations are met.

Awarding of Degrees. Rush University degrees are granted on the last Saturday of the quarter in which all degree requirements are completed. When degree requirements are met during the break following a quarter, the degree will be dated the end of the subsequent quarter. Degree requirements include all curricular and other program prerequisites, such as required courses, residency, minimum grade point average, cumulative quarter hours, etc. (See program descriptions for details.) Before a degree may be granted, all grades of incomplete (I) must convert to final grades.

Outstanding financial and other Medical Center obligations have no effect on the awarding of degrees; however, the diploma, student transcript, and other notification of a degree awarded will be withheld until these Medical Center obligations have been met.

Graduation Requirements. (See program descriptions for specific requirements.) Each candidate for the degree of D.N.Sc. or Ph.D. or for an M.S. with thesis is required to submit a degree approval form to the Office of the Registrar after completing all academic requirements including dissertation defense and submission of the dissertation to the library for microfilming. Doctoral candidates may not participate in the commencement ceremony before submitting this completed form.

Dual Degree. (undergraduates in nursing and medical technology) Some affiliated colleges award a bachelor's degree to students who have transferred to Rush University. Students receive the degree after they have met degree requirements of the affiliated college. Often those requirements have been modified slightly to accommodate the unique nature of the affiliated Rush program. Questions regarding degree requirements and eligibility should be directed to the registrar of the affiliated college.

To receive a degree from the affiliated college, each student must authorize the registrar of Rush University to send an official transcript of Rush course work to the affiliated college.

Graduation Honors. Candidates for the bachelor of science degree who have demonstrated academic excellence are honored at commencement by the Rush University faculty. Those earning a 3.4 or better grade point average based on six quarters at Rush are awarded the bachelor of science *cum laude*; those with 3.6 or better, *magna cum laude* and those with 3.8 or better, *summa cum laude*. Only Rush University course work is calculated

into the grade point average. Honors appear on the student's diploma and are announced during the commencement ceremony.

Prizes and Awards. The following prizes and awards are generally given annually at the Rush University Awards Ceremony.

The Aesculapius Award

This award is given to the outstanding resident-physician as voted by the medical students.

The American Medical Women's Association Scholarship and Achievement Citations

These citations honor women in the graduating class of Rush Medical College for outstanding scholarship and achievement.

The Audiology Award

This award is given to the outstanding graduate student as selected by the faculty.

The Dayton Ballis Humanities Award

This award is given to a Rush Medical College student for academic excellence in the humanities related to medicine.

The Arthur Dean Bevan Award

This award is given to the graduating medical student who has demonstrated clinical and academic achievement in surgery.

The Daniel Brainard Award

This award is given to the outstanding teacher in the basic sciences as voted by the medical students.

The Paul E. Carson Award

This award is given to the student who has demonstrated excellence in pharmacology.

The Ciba-Geigy Award

This award is given for outstanding community service by a sophomore medical student.

The Clinical Award

This award is given to the undergraduate nursing student who has consistently demonstrated outstanding clinical performance.

College of Health Sciences Dean's Award to an Undergraduate Student

This award is given for outstanding academic performance by an undergraduate student.

College of Health Sciences Dean's Award to a Graduate Student

This award is given for outstanding academic performance by a graduate student.

College of Health Sciences Faculty Award

This award is given to the outstanding teacher on the faculty as selected by the students.

The College of Nursing Dean's Award to an Undergraduate Student

This award is given for superior academic achievement in the undergraduate nursing program.

College of Nursing Dean's Award to a Graduate Student

This award is given for superior academic achievement in the graduate nursing program.

College of Nursing Undergraduate Faculty Award

This award is given to the outstanding faculty member as voted by the senior students.

The Communication Disorders and Sciences Award (Audiology Major)

This award is given to the outstanding graduate student as selected by the faculty.

The Communication Disorders and Sciences Award (Speech-Language Pathology Major)

This award is given to the outstanding graduate student as selected by the faculty.

Community Service Award

This award is given to the undergraduate nursing student who has made significant community service contributions.

The Department of Family Practice Award

This award is given to the graduating student who has demonstrated academic excellence in family medicine.

Department of Health Systems Management Award

This award is given to the outstanding graduate student as selected by the faculty.

The Department of Pediatrics Award

This award is given to the graduating student who has demonstrated outstanding achievement in pediatrics.

The Diane Nora Award

This award is presented to the student who has demonstrated outstanding clinical performance in the master's degree level clinical nursing courses.

The Nathan M. Freer Prize

This prize, endowed in 1892, is given to the outstanding senior medical student as voted by the faculty.

Gerontology Award

This award is given to the undergraduate student who has demonstrated excellence in gerontological nursing.

The John Giles Prize

This award is given for outstanding undergraduate work in epidemiology and public health as selected by the Department of Preventive Medicine.

The Janet M. Glasgow Memorial Award of the American Medical Women's Association

This award is given to the female medical student who graduates first in the class.

Golden Lamp Society Award

This award is presented to the outstanding doctoral nursing student for research and scholarship.

The Graduate College Award

This award is given for excellence in research among students enrolled in The Graduate College.

The Graduate College Faculty Award

This award is given to the outstanding teacher on the faculty as selected by the students.

The James B. Herrick Internal Medicine Award

This award is given to the graduating student who has demonstrated outstanding achievement in internal medicine.

The Kellogg Scholarship Award to a Doctoral Nursing Student

This award is given for superior academic achievement in the doctoral nursing program.

The Lemmon Company Student Award

This award is given to the graduating medical student who has excelled in the study of obstetrics and gynecology as demonstrated by excellence in scholarship and concern for patients.

The Luther Christman Award from the Nursing Alumni Association

This award is given to the undergraduate nursing student moving directly into post-baccalaureate studies who has demonstrated outstanding academic and clinical performance and leadership.



The Henry M. Lyman Memorial Prize

Endowed in 1908, this prize is given to a junior medical student for outstanding work.

The Nephrology Award from the Muehrcke Family Foundation

This award is given to the medical student who has demonstrated outstanding achievement in the field of nephrology.

The Occupational Therapy Faculty Award

This award is given to the student who has demonstrated a balance of scholarship, humanitarianism, integrity, and a professional commitment as selected by the faculty.

The Sir William Osler Pathology Prize

This prize is given to the medical student who has demonstrated outstanding achievement in diagnostic or experimental pathology.

The David Peck Prize

This prize is awarded to the student who has made the greatest contribution to the Student National Medical Association.

Bernard R. Pennington Memorial Award

This award is given for excellence in pastoral service as selected by the faculty in the Department of Religion and Health.

The Phoenix Award

This award is given to the outstanding physician-teacher as voted by the medical students.

The E. Virginia Pinney Award

This award, endowed in 1985, is given to the graduate student who has demonstrated outstanding leadership potential in the profession of dietetics.

Professional Organization Award

This award is given to the undergraduate nursing student who has demonstrated outstanding involvement in professional organizations resulting in relevant contributions to the nursing community.

Rush-Presbyterian-St. Luke's Nurses Alumni Association Award

This award is given to the outstanding graduating undergraduate nursing student.

The Sandoz Award

This award is given to the graduating student who has demonstrated outstanding achievement in the field of psychiatry.

Special Project Award

This award is given to the undergraduate nursing student who has demonstrated outstanding creative and original work as evidenced by a course project.

The Samuel G. Taylor III Prize

This award is given to the graduating student who has demonstrated excellent achievement in medical oncology.

The Undergraduate Cardiology Prize

This award is given to the graduating medical student who has had the best performance in a cardiology elective course.

The Upjohn Achievement Award

This award is given to the senior medical student with the best research project.

Writing Award

This award is given to the undergraduate nursing student who has demonstrated outstanding scholarly and/or creative writing.

Student Records

Name and Address Change. The Office of the Registrar maintains the current official listing of student names and addresses for Rush University. It is the responsibility of the student to keep the Office of the Registrar informed of changes in this information. A name/address change form is available in the Office of the Registrar. These changes are made daily on the computerized University Information System. It is suggested that the student also inform advisors and instructors of these changes.

Immunization Policy. In the interest of disease prevention and in compliance with Public Act 85-1315 (Illinois College and University Immunization Requirement), Rush University requires all entering students born after January 1, 1957 to show proof of immunity for measles, mumps, rubella, diphtheria and tetanus. Proof of immunization is held in the Office of the Registrar.

Directory Information Policy. Certain information classified by Rush University as directory information may be disclosed to the public. These are items of directory information: student's full name, local address and phone number, date and place of birth, home town, major field of study, year in school or class, participation in officially recognized activities, dates of attendance, degrees and awards received, previous educational institutions attended, previous majors, previous degrees and dates earned.

Each fall quarter the *Rush University Student Address Book* is published for student, faculty and staff use. It contains student names, local addresses and phone numbers, majors and classes. At the time of commencement exercises this information may be released in public announcements: student's full name, degree and major, previous institution and degree(s) and year(s) earned and home town.

Students may restrict the release of any item of information considered as directory information on a form provided in the Office of the Registrar, 101 Schweppe-Sprague Hall, by Friday of the first week of classes in each quarter.

Student Records Policy. The Family Educational Rights and Privacy Act of 1974 protects the privacy of current and former students enrolled in most educational institutions. Rush University has seven official student records. A student or former student may

inspect and review these records after making an appointment with the appropriate office. The records and their locations are as follows:

- official academic record: transcript--Office of the Registrar, 101 Schweppe-Sprague Hall
- registrar's folder: contains admission application, transcripts from other schools, registration information--Office of the Registrar, 101 Schweppe-Sprague Hall
- dean's folder: (Rush Medical College) a complete academic file which contains grade reports, written evaluations of clinical work, curricular flow charts, copies of correspondence and of all material in the Registrar's folder--Office of Clinical Curriculum, 524, Academic Facility; (College of Nursing) contains written evaluations of clinical work, curricular flow charts, grade reports--Office of the Program Directors, 436-37 Schweppe-Sprague Hall
- department folder: a complete academic file that may contain grade reports, written evaluations of clinical work, curricular flow charts, copies of correspondence and of all material in the Registrar's folder--clinical nutrition--502 Schweppe-Sprague Hall; communication disorders and sciences--203 Senn; health systems management--202 Academic Facility; medical physics--023 Woman's Board Cancer Treatment Center; medical technology--432 Schweppe-Sprague Hall; occupational therapy--418 Schweppe-Sprague Hall; religion and health--706 Schweppe-Sprague Hall; The Graduate College--474 Academic Facility
- financial affairs folder: records showing all billing and payments, notes and correspondence dealing with a student's finances--Office of Student Financial Affairs, 101 Schweppe-Sprague Hall
- financial aid folder: all information concerning financial aid for the student--Office of Student Financial Aid, 101 Schweppe-Sprague Hall
- placement folder: contains letters of recommendation filed by faculty members at the request of the student--Office of Student Affairs, 023 Schweppe-Sprague Hall

Students may obtain copies of transcripts from the institutions that hold the original records. Other portions of their records will be copied upon request. The request must be in writing and signed, must specifically identify the record desired and include the student's major, year in school or class, date of birth and social security number. There is no charge for copies of the student transcript. Other reproductions cost 50 cents per page. The University honors requests providing there is no outstanding obligation to the Medical Center. Students within commuting distance may be asked to review the desired data in person.

Students may request that the University amend information in their records they believe to be inaccurate, misleading or in violation of their privacy. If the office handling that file refuses to amend a record, the student may request a hearing to challenge that decision. A hearing will be granted. Students may place in their educational records comments upon information in the records and/or state their grievances with a decision not to amend the record.

Administrators who maintain the records adhere to a policy of limited access to administrators and faculty of Rush University who have a need for information in order for their offices to function, to determine academic progress or to designate award recipients. Other persons or organizations given access are those responsible for accrediting the institution, for providing the student with financial aid, for

complying with a judicial court order and for protecting the health or safety of students during an emergency.

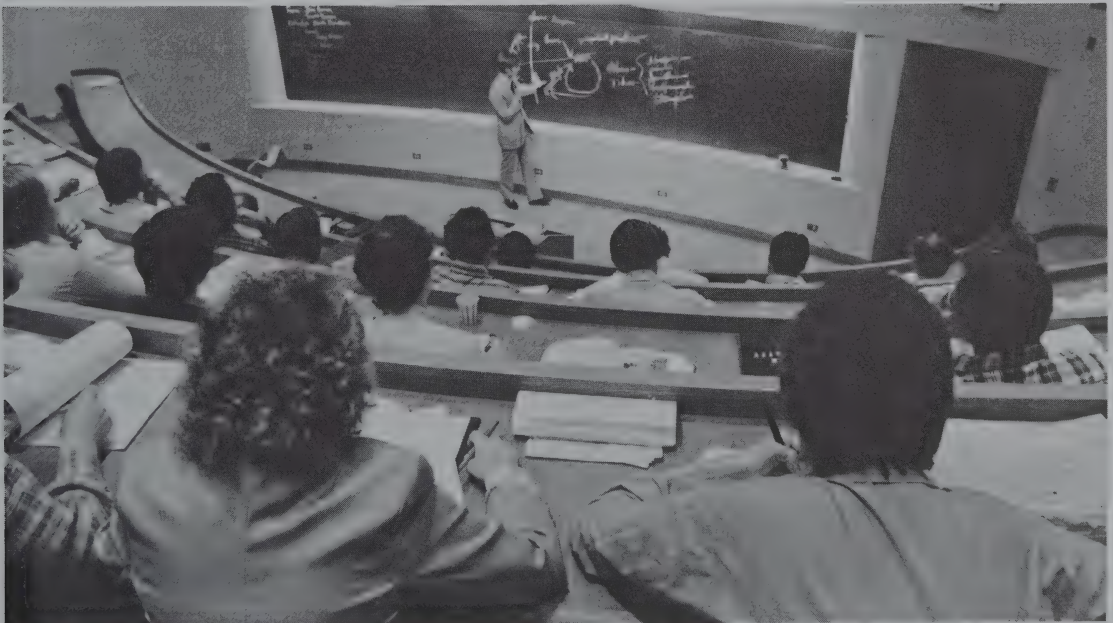
Disclosure of any student's record to others not listed in these policies must have prior written consent of the student. Requests for information and letters of consent are kept with the records.

Human Investigation

Any project or study involving human subjects must have approval of the Medical Center Committee on Human Investigation. Studies in the community as well as within the Medical Center must have this approval. The Office of Research Administration handles all requests and has established the protocol for proper investigative procedures.

Institutional Animal Care and Use Committee

All investigators and teachers that use animals in scientific projects and in classes must submit their plans to the Institutional Animal Care and Use Committee (IACUC) for approval prior to carrying out the project or program. Members of the committee are appointed by the President and include representation from the community and from the student body. The director of the Comparative Research Center coordinates the work of the IACUC.



FINANCIAL AFFAIRS

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Tuition and Fees

Tuition. Tuition and fees for the 1989-90 academic year follow. For estimates of other expenses, see the *Rush University Student Financial Aid Handbook*.

Tuition	Full Time (Per Quarter)	Part Time (1-11 Hrs.) (Per Qtr. Hr.)
College of Nursing Undergraduate	\$2,290.00	\$196.00
Col. of Health Sci Undergraduate	\$2,226.00	\$190.00
College of Nursing Graduate	\$2,640.00	\$224.00
Graduate all others and Unclassified	\$2,614.00	\$220.00
Rush Medical College Years 1 and 2	\$5,508.00	
Years 3 and 4	\$4,131.00	

Medical Students are charged for a maximum of four years of full time tuition. Students needing additional quarters to complete degree requirements will be charged the enrollment fee. See fees below. Although it may be possible for a medical student to complete all degree requirements prior to the spring quarter of his/her fourth year the spring tuition charge must be paid for a total of four years of tuition.

Fees. Enrollment Fee. Students in special programs are assessed \$200 per academic quarter. Students enrolled in a noncredit residency or academic enrichment program prior to receipt of their degree, must be registered for such a course and pay the enrollment fee in order to retain their student status. Any student having an outstanding incomplete after all other required coursework for the degree must enroll for no credit and pay the enrollment fee until the grade is satisfied. Single hospitalization insurance is not covered in this fee. Single coverage in the ANCHOR program for students is provided at no extra charge. (See Student Health Services Program for further information.)

Insurance. All students must have hospitalization coverage. (See Student Health Services Program for further information.)

Application Fee. A nonrefundable application fee of \$25 is required of all

applicants to offset the expense of processing the application, evaluating credentials, and maintaining a library of evaluation aids. This fee does not apply to any other charges such as tuition.

Enrollment Deposit. A \$100 enrollment deposit is required of health systems management and medical students prior to matriculation. All nursing students (including affiliated students) must deposit \$75 prior to matriculation. Other health sciences students submit a \$50 deposit. This guarantees students a place in the entering class. This deposit is nonrefundable and applies toward payment of the first quarter tuition.

Microscope Rental. Microscopes are available to students for a rental fee. Students enrolled in medical technology, microbiology, anatomy, and pathology courses must have microscopes. Rental fees will be included in the fall quarter bills for first-year medical students and third-year medical technology students. Students will be billed once for the entire rental period. Students taking anatomy, microbiology, and/or pathology will pay \$100 per year or \$200 for the entire two-year period (medical students). Junior-year medical technology students will pay \$100 for one year. Any student who withdraws from the University or obtains a microscope from another source, should notify the director of General Educational Resources who will authorize the bursar to prorate monthly the rental fee. (See General Educational Resources in Campus section.)

Returned Checks. If a student gives the University a check that is returned by the bank upon which it was drawn, marked "not sufficient funds," "payment stopped", or "account closed", a \$10 charge will be assessed for each occurrence.

Payment for Tuition, Fees, and On-campus Housing

The following statement represents the payment policy for all Rush University students:

Payment for tuition, fees, and on-campus housing or satisfactory arrangements for payment must be made with the Office of Student Financial Affairs before registration is complete. Students may not attend classes until after registration is complete. Any exception to this policy must be approved in writing by the vice president for academic resources.

Students are responsible for completing one or a combination of the following courses of action on or before the first day of classes each quarter:

1. Pay total tuition, fees and on-campus housing charges for the quarter.

2. Complete a deferred payment plan contract. This plan requires that one-third tuition, all fees and a \$15 service charge be paid on or before the first day of class. Additional payments of one-third are due on the fourth and eighth Mondays of the quarter. Contract forms are available in the Office of Student Financial Affairs.

3. Use the pending financial aid payment option. All students who have financial aid pending will be allowed to defer payment of that portion of tuition and fees that is covered by the anticipated aid. In order to use this option, students must have taken all the steps required of them to apply for the aid (e.g., the application for a guaranteed student loan or Rush Tuition Loan program must have been completed and submitted to the financial aid office). In order to avoid a late fee charge, students must make arrangements for payments of that portion of tuition and fees not covered with pending aid by completing steps one or two above.

Those students who have not made satisfactory arrangements will be given notice by mail during the third week of classes that they are delinquent in their financial obligations to the University. The notification will inform the students that they have until Friday of the fourth week of classes to satisfy all such financial obligations. On Monday of the fifth week of classes, those students who have not made satisfactory arrangements will be charged a \$100 late payment fee.

Students who choose the deferred payment plan contract and who fail to make a payment on the specified due dates will have until Friday of that week to satisfy their financial obligations without penalty; failure to do so will result in a \$50 late payment fee for each payment date missed. No notification is mailed since the rules are included in the signed contract.

At the end of the quarter, those students who still have outstanding balances with the University that are not covered by pending financial aid will receive neither grades nor transcripts; be dismissed from on-campus student housing; lose all University privileges and have their registration cancelled for the following quarter.

Refund Policy

Official withdrawal or dismissal from a course or from the University entitles a student to a refund of tuition according to the following schedule. No fees are refundable.

A student may receive a 100 percent refund if withdrawal occurs during the first calendar week in which the quarter begins. Otherwise, refunds will be made as follows:

Second week	80 percent refund
Third week	60 percent refund
Fourth week	40 percent refund
Fifth week	20 percent refund
After fifth week	no refund

Refunds will be shown as credits on the student's account unless the student requests a check for the amount of refund, less any amount still owed for other charges. Normally, checks are processed within two weeks. Students are not notified when the checks are ready. These checks can be picked up in the Office of Student Financial Affairs.

Student Health Services Program

The University's health services program is designed to promote the health and well-being of its student population and to protect the individual student from undue financial hardships that a medical emergency could cause. To accomplish this the University offers membership in two separate group insurance policies that, when combined, fulfill its goal of student health maintenance and protection. Unclassified students do not qualify for membership in Rush University's insurance programs.

The first is a group hospitalization policy underwritten by Blue Cross covering most of the hospital charges related to an inpatient stay or an emergency room visit. Applications are available at the Office of Student Financial Affairs and at fall registration when all students are required to provide proof of hospitalization coverage or sign up for Rush's Blue Cross plan.

As with all group policies, there is an annual open enrollment period when a subscriber may add dependents or make changes. Rush's Blue Cross enrollment occurs during the first two

weeks of fall quarter, and the only other time a dependent may be added is within 30 days of the date of marriage or the birth of a child. A booklet available at the student financial affairs office explains in more detail the exact coverage and exclusions. The student financial affairs office is located in 101 Schweppe-Sprague Hall.

Although membership in Rush's Blue Cross plan is not mandatory, it is a requirement that all students carry some hospitalization insurance from their date of matriculation until graduation. Upon entering Rush many students are covered by a family policy; however, all family policies have maximum age limits for children, normally 19 to 23 years of age. As a result, even though a student may be adequately covered upon entering Rush, at some date that coverage may stop. The University has no way of knowing when this will occur; consequently it is the student's responsibility to notify the student financial affairs office prior to that critical birthday so that there will be no lapse in coverage. This is extremely important, as all students must have hospitalization insurance. This is why, during fall registration, the financial affairs office requires all students to provide proof of alternative hospitalization coverage or join Rush's Blue Cross group plan. Proof of alternative hospitalization consists of presenting a current hospitalization policy or member identification card.

If, during the school year, a student wants to drop his/her Rush Blue Cross coverage, he/she must first show proof of similar coverage elsewhere before the University's coverage will be dropped either at the beginning or end of the month.

The second group plan at Rush is the ANCHOR Health Maintenance Organization Plan. ANCHOR offers outpatient primary care aimed at the prevention of illness, maintenance of good health and early detection and treatment of disease. When illness does occur, comprehensive care is provided through ANCHOR's group of primary care physicians and specialists. ANCHOR's benefits cover most physician and related fees including up to 20 outpatient mental health visits per calendar year for short-term evaluation and crisis intervention. Single membership in ANCHOR is available at no charge for all degree-seeking

Rush students who are registered (i.e., being charged tuition or enrollment fee). Coverage does not begin until an ANCHOR application is properly filled out. As with Blue Cross, fall quarter registration is the annual ANCHOR enrollment time at which students can add a spouse or child to their policy. The only other time additions to one's coverage can be made is within 30 days of the date of marriage or the birth of a child.

Currently, ANCHOR has 18 offices throughout the Chicago area with Saturday hours and some evening hours. When a student first joins, he/she selects a personal physician from among the ANCHOR staff, as well as the office location he/she thinks would be most convenient.

Normally, the central office located in the Triangle Building on the main campus will be most convenient. To aid students in their selection of a physician, a current list of participating physicians is available at the student financial affairs office or in any of the ANCHOR offices. As with Blue Cross, a booklet explaining in more detail the coverages and services available through ANCHOR is available from the Office of Student Financial Affairs.

Students should be aware that ANCHOR coverage does not include a hospitalization plan.

The following tables reflect 1988-89 Blue Cross and ANCHOR rates. Rates are subject to change.

Blue Cross

Coverage	Per Quarter (Including Summer)
Single	\$116
Family	\$430

ANCHOR

Coverage	Enrolled	Not Enrolled
Single	\$ -0-	\$108
Couple	\$109	\$217
Family	\$195	\$303

Returning students who were on Rush's insurance plans in the prior quarter will be dropped if they are not registered by the second week of classes. It is the students' responsibility to reapply for the insurance once they are registered.

FINANCIAL AID

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Financial Assistance

The financial aid program has been established at Rush University to provide assistance to students who cannot otherwise afford to pay the full cost of education through their personal or family resources.

In general, financial need is the basic criterion for the awarding of funds by Rush University. Accordingly, students and their families will be expected to contribute toward educational expenses to the fullest extent possible. The level of the expected contributions is determined by using a standard set of criteria to analyze financial information provided by the students and their families. If the available resources fall short of meeting budgeted costs, the financial aid staff will attempt to award sufficient financial aid to make up the difference.

Detailed information on financial aid and the application procedure is provided in the *Rush University Student Financial Aid Handbook*, which is available in the Office of Student Financial Aid. The staff is available to consult with students and parents on all matters regarding the financing of a Rush University education. Students and parents are welcomed and encouraged to make use of these services.

Satisfactory Academic Progress

In order to receive financial assistance from federal Title IV aid programs (Guaranteed Student Loan, Perkins Loan Program, Supplemental Educational Opportunity Grant, and College Work Study), the student must be making satisfactory academic progress. This federal requirement is contained in section 497(e) of the Higher Education Act of 1965, as amended, and is meant to ensure that only those students who meet progress standards toward their degree objectives continue to receive federal financial assistance.

Rush University's policy regarding satisfactory academic progress follows. This policy is distinct from the academic policies of each program published elsewhere in this bulletin.

The maximum length of time for a Rush University student to complete degree

requirements will be the length of time normally required for a student continuously enrolled on a half-time basis to complete a specific program. Thus, students would not be eligible for federal assistance if enrolled for more than four years in a program that is normally completed in two years. Likewise, students would lose financial aid eligibility if enrolled for more than eight years in a program normally completed in four years. Students attending Rush University on a part-time basis must complete a minimum number of hours each year to determine eligibility for continued federal assistance. Further information on eligibility is available in the Office of Student Financial Aid.

Students who are denied financial assistance due to failure to make satisfactory academic progress may appeal to the director of their program. The director may reinstate the student's satisfactory academic standing by providing a written statement to the Office of Student Financial Aid explaining how the student will be making progress toward the degree.

Financial Aid Awards

After evaluating the personal and family resources available to the student and taking into consideration awards from external sources, the Office of Student Financial Aid will award funds under the control of the University to students who have remaining unmet need. In varying quantities, a financial aid award may include scholarships/grants, loans, and employment. In order to distribute the available funds in the most equitable manner, the Office of Student Financial Aid establishes a formula which designates the sequence in which funds are awarded to students and the maximum amount awarded under each program. The formula provides for a certain amount of loans, and sometimes employment, before students are given consideration for scholarships. These formulas are applied consistently during any given year among all students at a given class level in a given college, as long as funds are available. Due to differences in the availability of funds from year to year and changes in eligibility requirements, the formulas are adjusted annually.

Institutional Scholarship and Loan Funds

Listed below are the organizations and named endowments that provide scholarship assistance to Rush University students.

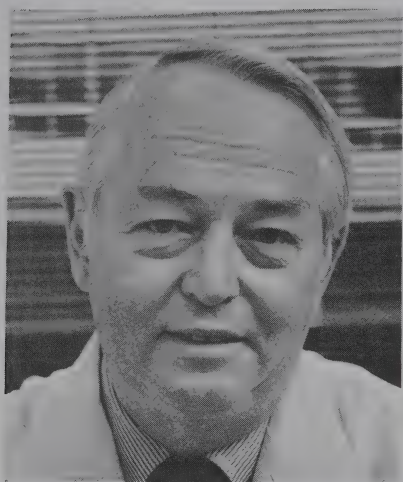
Rush-Presbyterian-St. Luke's Medical Center
Nurses Alumni Association
The Associates
Orpheus William Barlow, M.D.
Broda O. Barnes, M.D.
Alexander Brunschwig, M.D.
Carlson-Luckhart
The Catherine and Winfield Ellis-Philip N. Jones
Rush University Faculty Wives Association
Ben Fishkin, M.D.
Clark W. Finnerud, M.D.
Golden Lamp Society
Eunice Goebel Greeley
Jules and Eleanor Green
Florence D. Hagenah
Drs. Jones/Thompson/Ramsey/Kehoe
Philip N. Jones, M.D.
George M. Katzman, M.D.
Laurel E. Keith, M.D.
John L. and Helen Kellogg Foundation
Earl Leimbacher, M.D.
Lescrenier Medical Physics Scholarship
Foster G. McGaw
Joseph and Wendy Olk Scholarship
Pappageorge Memorial Scholarship
Pedro Poma, M.D. Scholarship
Robert Ryan, Jr., M.D.
Elizabeth Douglas Shorey
Emily Birnie Smith
Charles H. Solomon, M.D.
C. M. Swale
Homer Thomas Trust
A. Thompson, M.D. - M. Friedman
Endowed Scholarship
Rush-Presbyterian-St. Luke's Medical Center
Woman's Board

In addition, Rush University has loan funds available through resources provided by various donors and named loan programs.

Abbott Laboratories
Carl O. Almquist, M.D.
Aileen S. Andrew Foundation
Irving E. Benveniste
M. Irene Cavanaugh
Charity Hospital Association
Episcopal Medical Student Loan
Henry H. Everett, M.D.
Donald W. Fergusson
George Guibor, M.D.
Illinois State Medical Society
John Jacques, M.D., and Lawrence
Jacques, M.D.
Ruth E. Johnson Memorial Loan
Krehbiel Medical Student Loan
Margaret Krehbiel Student Loan
Grace M. Marshall Educational Foundation
Rush-Presbyterian-St. Luke's Medical Center
Medical Staff
Dr. David Monash
Joseph J. Muenster, M.D.
Anne M. and Paul J. Patchen, M.D., Loan
Frederick Henry Prince
Rush Medical College Alumni Association
Heyworth and Catherine Sanford
Rev. Canon Savage Memorial Loan
Simon M. Shubitz, M.D.
Searle Scholars Program
Procto C. Waldo
Jane Wheeler Warren
Vivian Weil
Rush-Presbyterian-St. Luke's Medical Center
Woman's Board

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Department of Medical Technology	76
Department of Occupational Therapy	79
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Division of Biochemistry	95
Division of Cell Biology	100
Division of Immunology	101
Division of Medical Physics	105
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*Henry P. Russe, M.D., Dean
Rush Medical College*

"Medical Education at Rush fosters inquiry, facilitates the acquisition of knowledge, builds lifelong habits of learning, and recognizes the unique qualities of physician and patient as essential to the process of compassionate and effective care."



RUSH MEDICAL COLLEGE

Philosophy

The process of becoming a physician is unique for each student who enters Rush. Each brings to his/her medical school experience a distinct educational, psychological and social background. As students define career goals, each develops personal ways of coping with the demands imposed by the physician's role. The Rush Medical College curriculum encourages pursuit of individual interests by emphasizing a solid foundation in the basic and clinical sciences, and by offering a wide range of elective opportunities in the Medical Center and in a network of affiliated and associated hospitals. Throughout the program, students are encouraged to develop habits of self-education and enthusiasm for the lifelong study of medicine according to specific interests and objectives. Upon matriculation, students are assigned academic advisors whose primary responsibilities are to provide guidance and serve as resources for students as they define professional goals, select courses, and deal with a variety of issues during their progress through medical school.

Long after students have taken their last medical school examinations, the sense of responsibility for the welfare of their patients remains the most important stimulus to maintaining the highest level of professional performance. The Rush faculty seeks to provide educational opportunities and to create an environment that will foster the ability to meet these responsibilities with competence and compassion.

Admission Requirements

Selection Process. Rush Medical College is strongly committed to the selection of individuals who will become vital members of the medical community as students, practitioners, educators, and researchers. Throughout the curriculum, emphasis is placed on the preparation of physicians who will function chiefly as medical practitioners and who will be committed to the delivery of quality health care to a variety of populations, including those that are now underserved.

Because Rush seeks to train physicians who will be committed to meeting society's health care needs, the Committee on Admissions seeks excellence in academic achievement and in noncognitive factors such as character, goals,

personality, accomplishments, and experience. High scholastic achievement is only a partial qualification for acceptance. The Committee on Admissions looks for individuals who exhibit social and intellectual maturity, personal integrity, motivation and concern. Strong preference for admission is given to residents of Illinois.

Admission to Rush Medical College depends upon satisfactory completion of a minimum of 90 semester hours (135 quarter hours) of undergraduate study before matriculation.

Rush requires all entering students to have successfully completed at least eight semester hours of physics; eight semester hours of biology, with emphasis in zoology; eight semester hours of inorganic chemistry, and eight semester hours of organic chemistry. In lieu of eight semester hours of organic chemistry, students may take four semester hours of organic chemistry and four semester hours of biochemistry. Survey courses in the premedical sciences will not fulfill these requirements. For students in special programs, exceptions to these requirements may be made on an individual basis. Courses in mathematics, social sciences, and English are strongly recommended. The committee suggests that comprehensive courses be selected that include study in the following areas: biology - molecular, cellular, developmental, and population; inorganic chemistry - properties of the elements, states of matter, chemical reaction, and aqueous solutions; organic chemistry - stereochemistry, covalent bonding, hydrocarbons, and organic compounds; and physics - mechanics, electricity, wave characteristics, thermodynamics, nuclear structure, and optics.

Because the required courses provide the foundation upon which modern biological and medical sciences are built, the committee gives special attention to competence in these areas. The committee requires that all of the course work submitted in fulfillment of specific admissions requirements must be evaluated on the basis of a traditional grading system. Such a system must employ a range of numbers or letters to indicate the comparative level of performance. If the applicant has received a grade of pass/credit for any courses on the required list, he/she must have the instructor supply, in writing, a statement evaluating the student's performance in that course. Applicants are advised to pursue subjects beyond the stated minimums if they have not done excellent work in the required courses.

Applicants who will have successfully completed three years of college consisting of a minimum of 90 semester hours or 135 quarter hours, who have no baccalaureate degree but otherwise meet the requirements, will be considered.

Concurrent M.D./Ph.D. Program

Rush University offers students the opportunity for studies that lead to both M.D. and Ph.D. degrees. These programs are particularly suited for students who aspire to careers in academic medicine and research. They enable students to obtain intensive training in specialized areas of the medical sciences while completing their medical studies.

The curricula for students in a combined M.D./Ph.D. program vary widely depending on the individual's previous education, scope of scientific study, and personal interests. Students in concurrent programs must meet the full conditions and requirements of The Graduate College and Rush Medical College. However, coursework leading to one degree may be acceptable as partial credit toward the formal requirements of the other degree. A properly coordinated program may afford a significant economy of time in completing studies toward both M.D. and Ph.D. degrees.

A student who enters Rush University with concurrent enrollment in a graduate program and the medical college will typically complete two years of basic science components of the medical college curriculum before becoming fully involved with requirements of the graduate program. Upon completion of the requirements for the Ph.D. degree, the student will return for the clinical portion of the medical program. Alternatives to this schedule are possible to enable students to develop programs that will most effectively satisfy their career objectives.

Ph.D. programs are offered in The Graduate College of Rush University in the following areas: anatomical sciences, biochemistry, immunology, medical physics, pharmacology, physiology and psychology.

Curriculum

Organization. The four-year Rush curriculum provides an appropriate background for individuals with a diversity of professional career goals. The curriculum is based on establishing a solid foundation in the basic sciences and clinical medicine through a core of required preclinical and clinical courses. In addition, there is ample elective time for students to pursue individual interests.

First Year--Regular Curriculum.

The primary objective of the first year is to provide students with exposure to the vocabulary and the fundamental concepts upon which the clinical sciences are based. The first year is comprised of three quarters of basic science material, organized by discipline, that emphasizes the structure, function, and behavior of the normal person. The following courses have been designated for each of the three quarters of the first year.

First Year, Regular Curriculum

Fall	Courses	Hours
ANA 471	Human Anatomy I	100
ANA 451	Histology	82
BCH 471	Biochemistry I	53
PHY 451	Physiology I	60
		295
Winter	Courses	
ANA 472	Human Anatomy II	91
BHV 451	Fundamentals of Behavior	40
BCH 472	Biochemistry II	61
PHY 452	Physiology II	61
		253
Spring	Courses	
BHV 453	Behavior in the Life Cycle	26
MIC 451	Microbiology Concepts	55
IMM 501	Immunology	54
NEU 451	Neurobiology	78
PVM 452	Preventive Medicine:	23
	Biostatistics I /	
	Community Health	236
	Total Hours First Year	784

Second Year Regular Curriculum. During the second year, students are concerned with the study of the causes and effects of disease and with therapeutics. Students initiate their work with patients in programs that emphasize interviewing, history taking and the physical examination.

Alternative Curriculum for the First and Second Year.

Rush Medical College has established an innovative preclinical program for 18 students in each entering class. This alternative curriculum provides beginning medical students more experience with clinical problems, emphasizes personal responsibility for learning and fosters the development of

Second Year Regular Curriculum

Fall	Courses	Hours
CCS 501	Clinical Concepts & Skills	32
MED 501	Clinical Pathophysiology I	72
PHR 501	Medical Pharmacology I	53
PSY 501	Intro. to Psychopathology	33
PTH 501	Pathology I	122
PVM 503	Preventive Medicine III	16
		328
Winter	Courses	
BHV 543	Observation and Communication	20
CCS 502	Clinical Concepts & Skills	73
MED 502	Clinical Pathophysiology II	77
PHR 502	Medical Pharmacology II	37
PTH 502	Pathology II	58
PVM 504	Preventive Medicine IV	8
		273
Spring	Courses	
CCS 502	Clinical Concepts & Skills	34
DRM 501	Intro to Dermatology	8
MED 503	Clinical Pathophysiology III	66
PHR 503	Medical Pharmacology III	21
PTH 503	Pathology III	45
		174
Total Hours Second Year		775

Alternative Curriculum: First Two Years

First Year	Fall Courses
ALT 451	Cellular and Molecular Biology
ALT 464	Behavioral Science I
ALT 471	Epidemiology
ALT 511	Introduction to Patient I
Winter Courses	
ALT 452	Anatomical Sciences
ALT 465	Behavioral Science II
ALT 472	Preventive Medicine I
ALT 512	Introduction to Patient II
Spring Courses	
ALT 453	Physiology & Intro. to Pharmacology
ALT 466	Behavioral Science III
ALT 473	Preventive Medicine II
ALT 513	Introduction to Patient III
Second Year	Fall Courses
ALT 514	Introduction to Patient IV
ALT 531	Neurosciences
ALT 540	General Pathology
Winter Courses	
ALT 515	Introduction to Patient V
ALT 532	Psychopathology
ALT 541	Pathology, Pathophysiology, and Pharmacology I
Spring Courses	
ALT 516	Introduction to Patient V
ALT 542	Pathology, Pathophysiology, and Pharmacology II

interpersonal skills. The new program involves individual and group assignments.

The content for the two-year program is equivalent to that offered in the regular curriculum, but the learning format is quite different. Each student is provided with specially designed "learning guidebooks" for each unit in the curriculum. The guidebooks outline the basic science content to be learned, illustrate relevant problem-solving approaches and contain appropriate reference material and learning exercises.

Students are organized into study groups with six students in each group. Each group meets formally twice a week for half a day with specially trained clinicians who facilitate student analysis of clinical problems and guide the students in addressing other learning objectives of the small group sessions. The teaching program does not include formally scheduled lectures. However, faculty members from each of the basic sciences are available to answer questions and otherwise discuss the subject

matter. Access to laboratories and tutorials for specific objectives in the preclinical curriculum is also included. Learning examinations are provided for use at the student's discretion. The examinations used in the alternative curriculum are consistent with the goals of the program and include integration of the basic science disciplines with clinical practice and the enhancement of problem-solving skills.

While the faculty believes that all students can benefit from this learning format, the program should be of special interest to students who prefer self-initiated, active responsibility for learning, profit from the give and take of many small group discussions, and enjoy problem solving. Students who elect to be part of the alternative curriculum will remain in the program.

for the first two years of medical school.

All students admitted to Rush Medical College are eligible for participation in the alternative curriculum. Since the alternative program is limited to a total of 18 students, it is anticipated that not all interested students will be offered a position in the program. Failure to gain admission to the alternative program will in no way jeopardize a student's status in the regular curriculum. Students who wish to be considered for the program should apply after they have been accepted at Rush Medical College.

Third and Fourth Years. The curricula of the third and fourth years provide students with training in clinical skills, diagnosis and patient management in a variety of patient care settings.

The clinical curriculum includes required core clerkships in family practice, medicine, neurology, pediatrics, psychiatry, obstetrics/gynecology, surgery, and a required senior subinternship in medicine, family practice or pediatrics totaling 58 weeks. In addition, 20 weeks of elective study in areas of special interest to each student are also required.

With few exceptions, the required core clerkships are taken at Rush-Presbyterian-St. Luke's Medical Center, Christ Hospital and Medical Center, or another Rush network institution. Eight of the 20 weeks of required elective work must be carried out at Rush-Presbyterian-St. Luke's Medical Center or in a Rush-sponsored elective at a network institution. Up to 12 weeks of additional elective study may be carried out at other approved institutions.

The core clerkships in internal medicine, family practice, obstetrics/gynecology, pediatrics, and surgery must be completed during the third year as prerequisites to a required (core) four week subinternship in internal medicine, family practice, or pediatrics which is taken during the senior year.

Though scheduling of the other required core clerkships is somewhat flexible, students are encouraged to complete these clerkships early in order to make better use of elective options in the fourth year. Students participate in assignment of required core clerkships although the final decision concerning core and elective clerkship rotations rests with the Office of the Dean.

Academic Progression. Evaluation of progress at the medical college is an important part of the learning process. Course examinations are aimed at allowing both the students and the faculty to assess progress toward defined learning goals. The final result of

evaluation in course work is recorded as honors, pass or fail. At the end of each quarter or clinical period, evaluations are submitted to the Office of the Dean.

The Committee on Student Evaluation and Promotion (COSEP) is a standing committee of Rush Medical College. The committee determines when students have satisfactorily completed requirements for promotion and may require additional study by students who have not satisfactorily completed aspects of the medical college curriculum. It also recommends candidates for the degree of doctor of medicine to the Faculty Council and accepts the responsibility of recommending to the Faculty Council the dismissal of any student whose academic performance, including non-cognitive as well as cognitive aspects, is unacceptable in the judgment of the committee.

National Board of Medical Examiners (NBME) subtests are occasionally used by departments to evaluate student knowledge. Scores from examinations are kept confidential and are not available to any other institution or agency without the prior written permission of the student. Students may review their complete academic record in the Office of Clinical Curriculum on Tuesday through Friday afternoons or by appointment.

Rush utilizes a system of student anonymity for all written examinations. Performance in courses is known only to the student, his/her academic advisor, the course director for each course and appropriate members of the Office of the Dean, provided that a minimum passing level of achievement has been demonstrated. Otherwise, the information is also presented to COSEP. Ratings by clinical instructors and, in most instances, oral and written examinations form the basis of evaluations of student performance in clerkships and, therefore, also the basis of recommendations for residencies. At the time of application for postgraduate training, a letter of evaluation is written by the Office of the Dean with major contributions from the student's academic advisor. During the composition of this letter, an individual conference is held with the student, and all pertinent factors for the letter of evaluation are assessed.

Academic Policies

(Additional policies are listed in the Academic Information section.)

Credit Hours. Rush University is on a quarter system. Each quarter is at least ten weeks in length. Rush Medical College assigns no credit

hour value to its courses. Medical students are enrolled full time even when carrying a reduced course load. Additionally, the clinical portion of the curriculum deviates from the quarter system by specifying the dates and number of weeks of full-time study spent in each area.

Credit by Examination. A student who passes a proficiency examination at Rush University will earn academic credit toward the degree. Information that is posted on the transcript is the course prefix and number, title and a K grade. A transcript guide that accompanies all transcripts issued by the Office of the Registrar explains that the K grade means credit was earned through proficiency examination.

Academic Difficulty. Students in Academic Difficulty. Course directors will, at the earliest possible time, notify the associate dean for medical student programs of the college of any students having academic difficulty. The Office of Medical Student Programs will work with such students and course directors to clarify the nature of the problem and to seek appropriate solutions. Students in academic difficulty should establish contact with the course director and appropriate member of the Office of the Dean to explore the factors relating to the student's academic difficulty.

Academic Probation. A student with significant academic deficiencies, as determined by COSEP, shall be considered on academic probation. Students placed on academic probation are thereby informed that there is serious concern about their academic performance and that they are subject to dismissal from the college should their unsatisfactory academic performance continue. Students shall be notified in writing why they have been placed on probation and what requirements must be met to be removed from probationary status. Students on probation may not register and receive credit toward the M.D. degree for courses (including clerkships) at other institutions without the consent of the Office of the Dean.

Automatic Probation. A student who has outstanding failures in courses scheduled for a total of 90 or more contact hours, who has a failure in a single required clerkship, or who does not pass the National Board of Medical Examiners Part I Examination by November of the third year shall automatically be placed on academic probation.

Probation by COSEP. COSEP may place on academic probation any medical student who demonstrates deficiencies that COSEP, in the

reasonable exercise of its discretion, determines to be significant.

Removal from Probation. A student shall remain on academic probation until he/she has made up all academic deficiencies and has met any other requirements established by COSEP for removal from probation.

Changes in Student Status. Scheduling First-Year Studies Over Two Years. Prior to the start of the spring quarter of the first year, a student may petition COSEP for permission to complete the requirements of the first year over a two-year period. A proposed schedule of courses, developed in consultation with a member of the Office of Medical Student Programs, will be presented to COSEP as part of the student's petition. COSEP shall decide upon such petition and advise the student in writing of its decision.

Leave of Absence. The associate dean for medical student programs will decide upon each request for a leave of absence and will determine the duration of the leave and the conditions, if any, for resuming status as a full- or part-time student. A student may not go on a leave of absence without first stating in writing to the dean his/her intent to return to the college to complete the requirements for the M.D. degree.

The dean will consult with COSEP insofar as possible before approving a leave of absence for a student with academic deficiencies. (See Academic Information section for an additional requirement.)

Withdrawal from the University. Withdrawal is the voluntary termination of enrollment by a student. A student who withdraws and subsequently seeks reinstatement must submit a written petition for reinstatement to the Committee on Admissions of the college, if withdrawal took place before the completion of the student's first quarter of enrollment. If the student withdrew subsequent to the first quarter of enrollment, the student must submit a written petition for reinstatement to COSEP.

A student who fails to register and enroll in courses according to the policies of the college will be considered to have withdrawn. A student withdrawing under this provision may submit a written petition for reinstatement to the dean. The dean shall determine whether special circumstances existed which justified the student's failure to register or whether the student's petition should be forwarded to the appropriate faculty committee as set forth in the above paragraph. (See Academic Information section for additional requirement.)

Suspension. Suspension is the administrative termination of the enrollment of a student for a

Dismissal. Dismissal is permanent administrative termination of the enrollment of a student.

Grounds for Dismissal. The following shall constitute grounds for academic dismissal from the college:

- outstanding failures, in any combination, in the first or second years in courses whose total of scheduled instructional hours equals or is greater than 35 percent of the total scheduled instructional hours for the entire first or second year. (An outstanding failure is a failure which remains after a student has not passed a course's single make-up examination or which remains because the student did not qualify to take the make-up examination.)
- a second failure in a given required core clerkship
- a failure in a second required core clerkship even though one may have previously been made up
- unsatisfactory completion of a remedial program by a student on academic probation where satisfactory completion of such program was a requirement for continued enrollment
- failure after three attempts to pass the Part I Examination of the National Board of Medical Examiners shall constitute grounds for automatic dismissal from Rush Medical College
- a determination by COSEP that a student is not fit to practice medicine. Fitness for the practice of medicine includes demonstrated ability to be a competent and effective physician and performance which reflects good moral character, a sense of responsibility, sound judgment, and the ability to master and properly apply subject matter.

Procedure for Dismissal. COSEP Action. COSEP shall review the performance of a student in accordance with these rules and, where appropriate, may recommend the dismissal of a student. The chairman of COSEP shall notify the student who is subject to a COSEP recommendation for dismissal of COSEP's action and of the student's opportunity to meet with COSEP before it submits its recommendation to the Faculty Council. If the student fails to request a meeting with COSEP within 14 days from his/her receipt of the chairman's notice, the student shall have waived

any right to such meeting. The chairman of COSEP shall determine the procedures for conducting the meeting with the student and shall in his/her sole discretion determine whether any participant in the meeting may be represented by an attorney.

After meeting with the student, if such meeting is requested in a proper and timely manner, COSEP shall submit its recommendation in writing to the Faculty Council.

Faculty Council Action. Within a reasonable time following its receipt of COSEP's recommendation, the Faculty Council shall consider the recommendation. The vice chairman of the council shall chair meetings of the council when the council is considering recommendations for the dismissal of a student and shall invite the student and the student's faculty advisor to attend the Faculty Council meeting during its consideration of the COSEP recommendation affecting the student. The Faculty Council may in its sole discretion conduct a part of its deliberations concerning such recommendation outside the presence of the student and his/her advisor. The vice chairman of the Faculty Council shall determine the procedures for conducting its meeting with the student and shall in his/her sole discretion determine whether any participant in the meeting may be represented by an attorney. The Faculty Council shall submit its written recommendation together with COSEP's recommendation to the dean.

Dean's Action. The dean shall consider the recommendations of COSEP and the Faculty Council and shall make the final determination concerning the affected student's status in the college. The dean shall notify the student, COSEP and the Faculty Council of his decision in the matter.

Examinations in a Course. The attainment of course goals by students should be evaluated by written examinations and/or other appropriate means. The course director will determine the number and format of examinations. Courses with more than 50 hours of scheduled instruction per quarter should include more than one examination or other evaluative exercise per quarter.

Course Grades. All preclinical courses use a uniform minimum pass level: a score of 70 percent or 1.5 standard deviations below the class mean, whichever is lower with the additional provision that any student with a score of less than 55% will be considered to have failed, regardless of the mean pass level determined by the curve. A grade of "honors"

may be given at the discretion of the course director to students whose performance falls within the top 15 percent of the class.

Examination Period. In the medical college, no classes are scheduled during the examination period; examinations in preclinical courses are scheduled by the assistant dean for preclinical curriculum.

Incomplete Grades. The grade of incomplete (I) is normally given only when circumstances beyond the control of the student prevent completion of course requirements and the student has received permission to defer completion of these unmet course requirements. The course director shall determine what work will be required to remove the incomplete and shall establish a specific time within which the student must complete such work. Upon completion of the unmet course requirements this grade will be replaced by the new grade.

In-Course Make-up Examinations.

Excused Absences. Students with valid reasons may request permission from the dean's office to reschedule an examination. The decision to grant such permission will be made by the dean's office in consultation with the course director.

Unexcused Absences. A course director is not obligated to provide a make-up examination for an unexcused absence from an examination.

Make-up Examinations for Failed Regular Curriculum Courses in First and Second Years. A student receiving a failing grade at the completion of a course shall be given an opportunity to take a single make-up examination as a means of demonstrating his/her proficiency in the subject to rectify his/her failure. However, a student who fails a course with a score more than two standard deviations below the class mean will not be offered such a make-up examination. Further, a student may take make-up examinations in no more than two courses in any one quarter. If more than two courses are failed, the student, in consultation with his/her academic advisor, may choose which examinations to take. Make-up exams will be completed no later than the first week of the quarter following a course failure. Format, content and passing grade for make-up exams will be determined by the course director. Make-up examinations will be scheduled by the dean's office in consultation with the appropriate course directors.

Status of Students with Course Failures. COSEP shall review the status of students who

fail make-up examinations or who have outstanding course failures for which they did not qualify to take make-up examinations and shall consider options for remedial work.

At appropriate times during the academic year, as determined by the chairman of COSEP in consultation with the associate dean for medical student programs, COSEP will review the progress of each student who has failed a course. After such review, COSEP either shall establish requirements which a student must meet in order to resolve his/her deficiencies in academic performance or shall recommend dismissal.

No student shall be promoted from the second year to the third year until he/she satisfactorily completes all requirements of the first and second years. COSEP, in its discretion, may schedule second-year courses concurrently with make-up work for unsatisfactory first-year work, as it may consider appropriate for an individual student.

Remedial Programs for Students Failing Courses.

First and Second Years. COSEP shall establish requirements for remedial work for students with one or more outstanding course failures in the first or second year. Remedial work requirements shall be reasonably related to the seriousness of the student's deficiencies. Such requirements may include, but need not be limited to the following: summer tutorial study with reexamination; participation in an approved summer course; retaking failed courses during the next academic year, and retaking all courses including those satisfactorily passed.

In developing requirements, COSEP will consider the needs of the individual student and will endeavor to develop a program that, if successfully completed, will strengthen the student's prospects for successfully completing the remainder of his/her college program. Students who have no outstanding failures at the end of an academic year but who have had to take make-up examinations in courses whose total of scheduled instructional hours equals or exceeds 30 percent of the complete program of instruction for that entire academic year may be placed on academic probation, in which situation COSEP will establish the requirements which students must meet before they are able to proceed to the studies of the next academic year.

Third and Fourth Years. A failure in a required core clerkship must be made up in a manner prescribed by the course director consistent with the reasons for the student's failure. Should a student be required to repeat all or part of the clinical rotation, effort should be made to have

the student work with different supervisory and instructional staff. A student required to repeat clinical work in a required core clerkship should complete the failed course prior to beginning another core rotation. A student failing an elective clerkship must either repeat the elective or, with the approval of the dean's office, complete an alternative elective.

Failure to Pass Part I of National Board of Medical Examiners. All students must take Part I of the NBME in June at the completion of their second year. Permission to defer taking this examination must be granted by the dean's office. Students who do not pass NBME Part I by November of their third year will be placed on probation and reviewed by COSEP. COSEP may require the student to defer part or all of his/her clinical program to provide sufficient time for preparation. Students must take NBME - Part I three of the first four times it is offered to the class. Students who fail the examination three times will be automatically dismissed.

Graduation Requirements. The following are prerequisites to the granting of the degree of doctor of medicine by Rush University.

- The level of achievement required by the faculty for the degree of doctor of medicine must be attained in a minimum of 35 months.
- Credit toward the M.D. degree may be granted to a student by the Office of the Dean for appropriate course work accomplished prior to matriculation at Rush Medical College.
- A minimum of 78 weeks of instruction at Rush Medical College is required for students entering at the third-year level from other medical schools. The Committee on Student Evaluation and Promotion may recommend additional quarters depending upon the progress made by the student following admission.
- Each student's progress in each year of the Rush Medical College curriculum will be evaluated by the Committee on Student Evaluation and Promotion, and additional study may be required in any year for students with academic difficulty.
- Students must pass all courses in the preclinical years before entering the clinical phase of the curriculum.
- Prior to graduation, students are required to pass Part I and complete Part II of the

examinations offered by the National Board of Medical Examiners.

- Students must pass all required clerkships and Part I of the examinations of the National Board of Medical Examiners before the date of commencement in order to participate in commencement ceremonies.

Policies Concerning Student Misconduct

The Committee on Student Judiciary Review is charged with investigating and adjudicating charges of student misconduct of a nonacademic nature, including but not limited to: violations of commonly accepted ethical standards of an academic community, such as cheating and plagiarism; falsification of student records, transcripts, financial aid forms or applications; unlawful use or possession of controlled substances on the Medical Center campus; conviction of a crime deemed serious enough to render the student unfit to pursue his/her profession, or other conduct that is inconsistent with generally accepted standards of behavior within an academic community or the medical profession.

All charges of student misconduct of a nonacademic nature shall be presented to the associate dean for medical student programs. If, in the opinion of the associate dean, the matter may be resolved without a hearing, an attempt may be made to do so.

The student charged with misconduct or the associate dean may at any time exercise the right to have the charges heard by the Committee on Student Judiciary Review. In every case, the associate dean will notify the complainant in writing, by registered letter within 30 days of receiving the complaint, as to whether the matter was resolved without a hearing, or whether the matter was referred to the Committee on Student Judiciary Review. If a disposition requires more than 30 days, the associate dean will notify the complainant in writing every 30 days until the matter has reached a disposition.

If the complainant is dissatisfied with the resolution of a matter that has not been referred to the Committee on Student Judiciary Review for a hearing, he/she may request that the decision be reviewed by an ad hoc committee consisting of two faculty members and one student appointed by the dean. In order for a complainant to initiate a review of the associate dean's decision, the complainant must notify the associate dean in writing that he/she seeks a review, and the notification must reach the

associate dean within 15 working days from the time the complainant received written notification of the associate dean's disposition.

Upon a timely request, the dean will constitute the Ad Hoc Committee within two weeks. Members of the Ad Hoc committee may not simultaneously serve as members of the Committee on Student Judiciary Review. The Ad Hoc committee will convene to accept testimony (in person or in writing) from the complainant, the student charged, and the associate dean. The Ad Hoc Committee will only accept evidence that addresses the issue of whether the associate dean failed to consider certain relevant facts that would warrant a full hearing. In the case of such a review, the Ad Hoc Committee may reach one of two decisions by a simple majority vote: 1) endorsement of the associate dean's prior disposition of the matter or 2) a decision ordering that the Committee on Student Judiciary Review hear the matter in a full hearing.

The decision of the committee shall be in writing, shall contain a summary of the evidence and testimony upon which the decision is based, and shall be delivered to the student, the senior representative body of the college, and the dean. The senior representative body shall consider the committee's determination and any written exceptions to said determination submitted by the student, and shall render its recommendation adopting, rejecting or modifying, in whole or in part, the committee's conclusion. Copies of the senior representative body's recommendation shall be transmitted to the Committee on Student Judiciary Review, the student and the dean. The dean will then consider the matter and render a final, nonappealable decision with respect to the charges of misconduct.

A copy of the complete Policies and Procedures of the Committee on Student Judiciary Review, including the rules for the conduct of hearings, is available from either the associate dean for medical student programs or the chairman of the committee.

Academic Advisor Program

The Academic Advisor Program consists of specially selected and trained faculty members for each class who provide systematic counseling and guidance for cohorts of approximately 15 students each throughout the four years of medical school. The advisors are kept informed of current policies, procedures and trends affecting student participation in both curricular and noncurricular aspects of medical school by the assistant dean for academic counseling, who is responsible for program planning, coordination, and evaluation. Advisors

provide counseling in three interrelated areas: academic (regarding the acquisition of the knowledge and skills for becoming a competent physician), personal (regarding the growth and development of the person), and professional (regarding the selection of a career and graduate training program for which the individual is best suited). Besides assisting each of their advisees through the various stages of medical school, the advisors are directly involved in writing the dean's letter, which is the summation of the student's progress while at Rush used in applying to graduate medical education (residency training) programs.

Student Research Opportunities

Students are encouraged to have some research experience while they are in medical school. The opportunities range from laboratory experiences in the biomedical sciences to clinical investigation and field work in epidemiology, preventive medicine, and primary care. Such research can be carried out during summers or during time allotted for elective experiences. The student's academic advisor and the Office of Medical Student Programs will assist in arranging for research experiences.

Continuing Medical Education

The Office of Continuing Medical Education supports the sponsorship of medical and health professions symposia, workshops, and conferences for practicing professionals. Students may register at reduced rates for some Rush-sponsored programs. The staff provides services to faculty and staff of the University and Medical Center that include consultation in planning meetings, budget preparation and marketing, including strategy and brochure development, printing, and advertizing. A computerized registration system maintains attendee records, confirmation letters, and attendance lists. For each meeting, the office prepares name tags and certificates of completion.

All programs are supervised by an experienced meeting planner who directs the marketing activities, orders all supplies and audiovisual equipment, and is on site during the program to assure its smooth operation. After the program concludes, the meeting planner prepares a program evaluation, a complete financial report, and detailed marketing and registration summaries.

Information regarding services and future programs can be obtained by calling (312) 942-7119 or 8728.



*Kathleen Gainor Andreoli, D.S.N.,
The John L. and Helen Kellogg Dean,
College of Nursing
Vice President, Nursing Affairs*

"At Rush-Presbyterian-St. Luke's Medical Center nursing sets a national standard for excellence in patient care. This is accomplished through the unique integration of academic functions and health care services resulting in innovative nursing care delivery systems, nationally recognized educational programs culminating in the preparation of clinical nursing scholars in specialized care disciplines, and research programs that contribute to the scientific basis of clinical and administrative practice in nursing."



Philosophy

The faculty of the College of Nursing embraces Rush University's commitment to the achievement of national and international leadership in setting of standards of excellence in patient care, education, research and management. This is accomplished through a unique integration of the academic function with the health care function which aims to provide high quality, compassionate, comprehensive health care services.

Nursing as a health discipline applies humanistic, scientific, and professional knowledge in patient care, and is responsible for the generation, accumulation, and dissemination of new knowledge that will improve nursing care and its delivery. The ability to work collaboratively with other health professionals and to contribute constructively towards change in the provision of health services to society are integral components of the College of Nursing's philosophy.

The profession's focus of concern is maximizing the health of humankind. Health is viewed as a dynamic process that reflects adaptation and change in various levels of the human system (individual, group, society). Human functioning occurs within the context of interacting biological, psychological, social and environmental systems and varies throughout the life cycle. Thus, humans are exposed to disease and discord as well as opportunities for growth. The nurse acts with and/or for patients to provide care and interventions that maximize functioning and promote positive responses to actual or potential health problems.

Through the use of a systematic problem solving technique (the nursing process), professional nurses assess their patients' health status and plan, implement and evaluate interventions that support the health process. Nursing practice involves collaboration with the patient and other health professionals in providing and coordinating health care services. The independent and interdependent functions of the nurse are based on the profession's continuously developing body of knowledge.

Learning is viewed as a life-long process; thus programs offered by the College of Nursing provide for sequential professional development in each of the role components of practice, education, research and management. Students enter and exit the professional learning system at various levels based on their personal backgrounds and career goals. Faculty members provide learning environments that enhance the student's individual potential and

professional growth. Independent learning and flexibility are encouraged in meeting program objectives.

Education for professional nursing includes the elements of a liberal education, the inculcation of professional values, and the discovery, synthesis and application of knowledge in nursing care. Scholarly inquiry, competency in clinical judgement and leadership are personal qualities essential for promotion of the profession. Growth and development of these qualities are fostered in students at all program levels. Thus, the College of Nursing of Rush University advances the profession by contributing to its developing body of knowledge; by setting and maintaining standards of excellence in nursing practice, education, research and management; and by providing innovations in nursing and health care.

Entry and Exit Options

Along with the adoption of a revised philosophy in 1987, the faculty of the College of Nursing approved a curriculum framework which allows multiple entry and exit options for students pursuing professional nursing education. Two new entry options (R.N./M.S. and Graduate Level Entry for students with no previous nursing education) and one new exit option (Doctor of Nursing) were incorporated in the revised curriculum. Previous academic and professional education serve as the foundation for programs of study preparing students for progressive levels of specialization and responsibility as professional nurses.

Exit Points. Four exit options are available to students enrolled in the College of Nursing. Depending on the background of the student, four degree offerings, Bachelor of Science (B.S.), Master of Science (M.S.), Doctor of Nursing (N.D.) and the Doctor of Nursing Science (D.N.Sc.) comprise the exit points in the curriculum continuum. These are the points at which a student may end his/her academic advancement or stop with the option of reentry to continue his/her academic growth in nursing. Movement from one exit level to the next is always contingent upon evidence of academic potential for success at higher levels of study. Academic progression is reviewed regularly and students are advised of the options available to them.

Terminal objectives for each of the four degree points are displayed on the following pages.

TERMINAL OBJECTIVES FOR GRADUATES

Conceptual Threads	Bachelor of Science	Master of Science
1. Disciplinary knowledge	<p>Synthesize and apply a broad base of knowledge from the humanities and biological and social sciences in clinical nursing practice.</p> <p>Apply selected theories in clinical nursing practice.</p>	<p>Synthesize and apply an in-depth base of knowledge from selected humanities and biological and social sciences in a specialty clinical practice.</p> <p>Apply a variety of theories in clinical nursing practice.</p>
2. Clinical Practice	<p>Function as generalists in clinical nursing practice.</p> <p>Demonstrate clinical judgement in assessment, planning, implementation and evaluation of preventive, therapeutic and rehabilitative health care for individuals, families and communities throughout the lifecycle.</p> <p>Determine the need for and utilize a consultant for clinical problem solving.</p>	<p>Function as specialists in nursing practice.</p> <p>Demonstrate clinical judgement in the assessment, planning, implementation and evaluation of patients in a specialty area of practice.</p> <p>Provide leadership in a specialty area of practice.</p>
3. Learning/ Teaching	Identify and apply basic concepts and principles of learning and teaching with patients and peers.	Utilize concepts and principles of learning and teaching with patients (individual and group) and peers in a specialty area of practice.
4. Management/ Leadership	<p>Utilize basic concepts of leadership and management including knowledge of internal and external organizational influences on nursing practice.</p> <p>Function collaboratively with other members of the health care team to provide continuity of care.</p>	<p>Analyze the nursing component of health care systems within the context of interacting social, economic and political systems</p> <p>Participate in the change process of health care systems, incorporating knowledge of social and political forces.</p>
5. Research	<p>Apply research findings in clinical practice.</p> <p>Identify clinical problems for continued research.</p>	<p>Analyze, evaluate and apply research findings in the selected field of clinical practice.</p> <p>Participate in clinical research studies.</p>
6. Professionalism	<p>Demonstrate commitment and accountability to health care consumers and to professional standards.</p> <p>Engage in activities that promote individual professional development.</p> <p>Demonstrate an understanding of personal values, attitudes, and nursing qualities that form the foundation for professional behavior.</p>	<p>Participate in the development of professional standards for clinical practice.</p> <p>Participate in activities which promote development of the profession.</p> <p>Incorporate professional values in specialty nursing practice.</p>

Bachelor of Science. The objectives of the undergraduate program in nursing are to create a climate of learning for students to grow and develop as competent beginning professional nurses.

Master of Science. The master's level of the curriculum is designed to prepare graduates to function as beginning clinical nurse specialists. These roles require the central focus on clinical practice with a beginning level of knowledge and skill in education, research, administration and consultation.

OF THE COLLEGE OF NURSING

Doctor of Nursing	Doctor of Nursing Science	Conceptual Threads
<p>Use understanding of complex clinical situations to build specialty nursing knowledge.</p> <p>Evaluate usefulness of theories for clinical nursing practice, education and management.</p>	<p>Integrate knowledge from multiple disciplines in providing clinical nursing practice.</p> <p>Test and/or generate concepts, theories and models for clinical nursing practice.</p>	1. Disciplinary knowledge
<p>Function as advanced clinical specialists or nurse practitioners integrating the role of teacher or manager within clinical practice.</p> <p>Demonstrate advanced clinical judgement in assessment, planning, implementation and evaluation of patients in a specialty area of practice.</p> <p>Provide clinical consultation in a specialty area of practice.</p>	<p>Function as clinical nursing scientists.</p> <p>Advance the use of clinical judgement in clinical nursing practice.</p> <p>Provide consultation in the resolution of issues and problems in clinical practice.</p>	2. Clinical Practice
<p>Provide consultation for learning and teaching needs of patients and peers.</p>	<p>Evaluate the application of concepts and principles of learning and teaching within clinical practice, education and management.</p>	3. Learning/ Teaching
<p>Analyze the social, economic and political components of health care systems which affect care planning and delivery.</p> <p>Initiate change and collaborate with others to implement and evaluate changes in health care systems.</p>	<p>Systematically evaluate changes in care systems commensurate with current knowledge and future health needs of society.</p> <p>Provide leadership in management and change processes.</p>	4. Management/ Leadership
<p>Initiate clinical research utilization studies.</p> <p>Promote an environment which facilitates the conduct and utilization of clinical research.</p>	<p>Design, conduct, direct, and report clinical research studies.</p>	5. Research
<p>Provide leadership in the development of professional standards for clinical practice.</p> <p>Facilitate the professional growth and development of others.</p> <p>Insure the incorporation of professional values in nursing practice, education, management and research.</p>	<p>Evaluate standards set forth by the profession in the advancement of nursing practice and nursing science.</p> <p>Demonstrate commitment to the advancement of nursing practice and nursing science through the dissemination of knowledge.</p>	6. Professionalism

Doctor of Nursing. The student who completes the prescribed program of study for the N.D. degree is prepared to function as an advanced clinical specialist or nurse practitioner, integrating the role of teacher, consultant and manager of clinical practice. The graduate will also be prepared to initiate clinical research utilization studies and promote an environment which facilitates the conduct and utilization of clinical research.

Doctor of Nursing Science. A graduate of the D.N.Sc. program will have developed competencies as an expert clinical practitioner, the investigative skills of a nurse researcher, and the leadership skills for developing health policy and changing health care systems.

Entry Points. Several entry points are available, depending on the educational goals and academic background of the student. Students with no formal background in nursing can progress through the highest degree offered or exit at another level. Likewise those with master's level preparation can enter and achieve either of the higher degrees offered. Six entry points are available, depending on the background of the applicant.

1. College student with ninety hours of college credit.
2. R.N. with a minimum of ninety hours of college credit.*
3. College graduate with a baccalaureate degree.
4. R.N. with a baccalaureate degree in a field other than nursing.*
5. R.N. with a baccalaureate degree with an upper division major in nursing
6. R.N. with a master's degree in nursing

Applicants from group 1 must apply for the B.S. exit.

Applicants from group 2 may apply to either the baccalaureate exit or for one of the graduate exits. Those not meeting graduate admissions standards may be acceptable for the baccalaureate program.

Applicants from groups 3 through 5 may apply directly for the M.S. degree, the N.D. degree or the D.N.Sc. degree programs

Applicants from group 6 may apply for the N.D. or D.N.Sc. programs.

Registered Nurse (R.N.) applicants from other than NLN accredited programs or R.N. applicants who do not have a B.S.N. may need to take placement examinations to validate previous nursing course work. See groups indicated with an asterisk (*) above. Information regarding these examinations may be obtained from the College Admissions Services.

Admission

Prelicensure Program (Bachelor of Science). Students may enter Rush at the junior level after completing a minimum of two years at another accredited college or university. An individual may attend either an approved postsecondary institution of his/her choice or one of 16 colleges and universities affiliated with Rush. Although students from affiliated schools have priority in admission, these students usually comprise approximately 25 percent of the entering class. All other spaces are filled by applicants from nonaffiliated institutions.

Students interested in attending an affiliated school are encouraged to submit applications to the affiliated colleges and universities soon after the beginning of their senior year in high school. Each college has its own entrance requirements. The student's academic progress will be monitored by both Rush and the health careers advisor on the affiliated college campus. Students meeting the objectives of the prehealth curriculum, obtaining the approval of the health careers advisor and filing all required documents, will move to Rush University to pursue the final two years of the program.

Transfer credit is not awarded for required course work in which the student earned less than a C grade. Physical education and technical skill courses are not accepted for transfer credit.

Program Prerequisites. Applicants from groups 1 through 3 must take course work that includes the following:

Natural Sciences #	25-30 quarter hours
Social Sciences ##	25-30 quarter hours
Humanities	12 quarter hours
English Composition	1 course
Introductory Statistics	1 course

Recommended courses include inorganic and organic chemistry, human anatomy and physiology, microbiology

Recommended courses include Growth and Development

Those that have deficiencies in course work may be found eligible for entrance but may be required to take up to 10 quarter hours of science coursework in order to gain sufficient background to proceed.

Applicants must submit a high school transcript and transcripts of all college work attempted, results of the Scholastic Aptitude Test (SAT) and/or American College Test (ACT) and recommendations from three individuals who know the applicant well. Two recommendations must come from former teachers and one from the applicant's most recent employer, when applicable.

All materials of the application are taken into consideration when evaluating an applicant.

Graduate Nursing Programs. Each applicant to a graduate nursing program should have earned a baccalaureate degree with a recognized upper division major. The majority of credit toward the degree should be earned through university level coursework. Previous nursing coursework completed at schools not accredited by the National League for Nursing (NLN) or at

schools not offering an upper division major in nursing must be validated by examinations to assist in the evaluation of previous nursing coursework. Arrangements for these examinations are managed by the Office of College Admissions Services.

Programs of study developed by the student and his/her advisor will incorporate previous academic work and the requirements for the exit option selected by the student. Individuals with no previous nursing education will complete prelicensure requirements as part of their graduate studies. Progression from one level of graduate study to another requires maintenance of stipulated academic standards.

Applicants to the graduate programs must submit transcripts of all college work attempted, and Graduate Record Examination (GRE) results. Registered nurses must submit evidence of licensure in at least one state or jurisdiction. Persons who have not completed prelicensure nursing coursework must submit a high school transcript or evidence of equivalency. All applicants must complete an interview with at least one faculty member and submit recommendations from three persons who can evaluate the individual's potential for success in graduate study. D.N.Sc. applicants must submit at least one recommendation from a person who has completed doctoral studies.

All materials submitted are taken into consideration when evaluating a student. The faculty may recommend an exit option different from the one requested based upon an evaluation of the applicant's potential for success in the curriculum.

Foreign Students. Students from other countries are welcome to apply to both undergraduate and graduate programs but only limited financial aid is available. Successful completion of the Test of English as a Foreign Language (TOEFL) - minimum score of 550 - and Test of Written English (TWE) - minimum score of 5, are required if the major portion of the applicant's prior education has not taken place in an English-speaking school.

Curriculum

Bachelor of Science. The undergraduate curriculum consists of 90 quarter hours of pre-health coursework including those program prerequisites listed in the admissions section. The two year upper division nursing curriculum requires a minimum of 90 quarter hours of upper division study in nursing and related science courses for a total of 180 quarter hours for the Bachelor of Science degree.

Required courses for this program are listed below and include 31-42 hours of basic nursing and science:

NUR 302	Foundations of Nursing Practice	6
NUR 305	The Role of the Nurse in Health & Illness	4
Natural Science Basis for Nursing Practice		
NUR 341	N.S.B.N.P.: Microbiology	2
NUR 342	N.S.B.N.P.: Inorganic Chemistry	2
NUR 343	N.S.B.N.P.: Organic Chem & Biochem	3
NUR 344	N.S.B.N.P.: Anatomy and Physiology	4
NUR 361	Pathophysiology	3
NUR 363	Theories of Human Response to Illness	4
NUR 382	Introduction to Research	2
NUR 403	Social Systems Theory in Nursing	2
NUR 405	Role of the Nurse in Hlth Care Systems	3
NUR 410	Educational Processes in Nursing	2
NUR 472	Intro. to Normal and Clinical Nutrition	2
PHR 301	Introduction to Pharmacology	3

Seven primary clinical courses of five quarter hours each (35 q.h. total) are required :

NUR 314	Medical Surgical Primary Clinical I	5
NUR 315	Medical Surgical Primary Clinical II	5
NUR 316	Pediatric Nursing Primary Clinical	5
NUR 317	Obstetrical Nursing Primary Clinical	5
NUR 318	Gerontological Nursing Primary Clinical	5
NUR 319	Community Nursing Primary Clinical	5
NUR 320	Psychiatric Nursing Primary Clinical	5

Enrollment in secondary clinical courses may begin after completion of four primary clinical course. Three secondary clinical courses of five hours each (15 q.h. total)are required:

NUR 411	Nsg for Hlth Promotion & Maintenance	5
NUR 412	Nsg for Hlth Restoration & Support	5
NUR 413	Nsg for Continued Care & Rehabilitation	5

The Graduate Curriculum. The graduate curriculum allows the student to exit with the master of science degree or if accepted for further study, proceed for the N.D. or D.N.Sc. A set of core courses is required for every student at the graduate level with additional hours for each higher degree. Cognate courses representing coursework from the biological, behavioral and organizational sciences are determined by each degree. Advanced clinical specialty courses are required as determined by an area of concentration.

A minimum of 12 hours of practicum in the area of concentration for the M.S. degree is required plus an additional 8 hours of practicum for the N.D. The table above lists the requirements.

Curriculum: Graduate Program

Master of Science		Doctor of Nursing		Doctor of Nursing Science	
CORE COURSES	HOURS	CORE COURSES	HOURS	CORE COURSES	HOURS
Advanced Practice Role	2	Role in Health Care Policy	3	Theory Development	4
Concepts, Models, Theories	2	Systems Impact of Care	2	Methods and Design	6
Physical Assessment	3	Evaluation of Theory	2	Directed Research	4
Nursing Research	2	Utilization of Research	2		14
	9		9		
COGNATES		COGNATES		COGNATES	
Biostatistics I	4	Biostatistics II	3	Biostatistics III	3
Biological Science	Varies	Additional as appropriate		Additional as appropriate	
Social Sciences	Varies	to program of studies		to program of studies	
Humanities	Varies				
ADVANCED CLINICAL SPECIALTY		ADVANCED CLINICAL SPECIALTY		ADVANCED CLINICAL SPECIALTY	
Seminar and Practicum	16-20	Seminar and Practicum	8-15	Clinical Seminar	2
		N.D. Seminar	2	Clinical Practicum	12
ELECTIVES	Varies	ELECTIVES	Varies	ELECTIVES	Varies
CLINICAL RESIDENCY	12 mo.			Minor (optional)	18
(Required by anesthesia program)				Dissertation	Varies
		Beyond masters degree	30	Beyond N.D. degree	40
PROGRAM TOTAL	55	PROGRAM TOTAL	85	PROGRAM TOTAL	125

Course requirements vary in each major. The college reserves the right to modify course requirements in consideration of overall curricular goals and design. At least 55 quarter hours of graduate credit or more, depending upon specialization, are required for the M.S. degree. The N.D. degree requires at least 85 quarter hours of post baccalaureate study and the D.N.Sc. degree requires 125 quarter hours of post baccalaureate study exclusive of the dissertation.

Master of Science. The master of science degree in nursing provides opportunities for focus in clinical specialization. Students designate an area of concentration in gerontology, home health care, medical, surgical, oncology, parent child health, or psychiatric/mental health nursing. Specialization is developed with selections of clinical seminar courses and practica. Numerous options of study are available for student selection in anesthesia, community health, parent child, oncology, orthopaedic, neurologic, transplantation, cardiopulmonary, rehabilitation, or psychiatric nursing with acutely, critically, chronically ill populations.

The master of science degree in nursing requires completion of a minimum of 55 quarter hours of credit (four quarters of full-time study or 8 to 10 quarters of part-time study),

exclusive of prerequisites. Programs preparing the nurse practitioner require an additional period of study

Doctor of Nursing. The doctor of nursing degree allows an emphasis on advanced clinical nursing practice. All areas of concentration listed at the M.S. level are available for the N.D. level. Nurse practitioner foci include: community health, gerontology, neonatal, and pediatric.

Students who have completed at least an undergraduate liberal arts degree and qualify for graduate study can complete the requirements for the N.D. degree in 12 to 15 quarters of full-time study (approximately four academic years of enrollment as full-time students). Students with prior nursing education are evaluated individually and are required to complete curriculum requirements not already accomplished in their earlier nursing education.

Doctor of Nursing Science. The research doctoral program leading to the Doctor of Nursing Science (D.N.Sc.) is designed to develop nursing knowledge through the integration of research in advanced clinical practice. Cognate studies, clinical practice and research methodologies are combined for application to diverse and changing health care needs.

The doctoral student and his/her advisor mutually define an individual program that includes an area of clinical nursing for specialization and investigation. The doctoral program will enable the graduate to have the competencies of an expert clinician, the investigative skills of a nurse-researcher and the leadership skills needed for developing health care systems.

Academic Policies

(Additional policies are listed in the Academic Information section.)

Academic Progression. Student progress in the College of Nursing is reviewed and evaluated in several ways. The academic policies established by the faculty are interpreted and applied by the student's academic advisor, director of student support services and the Committee on Progressions and Graduations. The faculty reserves the right to request the withdrawal of any student whose conduct, physical or mental health or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University.

Since much of the work in nursing assumes that students will achieve a progressively higher level of understanding and skill, high academic performance is expected. The individual student is responsible for acquiring knowledge inside and outside of formal classroom and clinical settings.

Baccalaureate Students. Baccalaureate students will be considered in good standing at Rush University unless placed on academic probation. A quarterly and cumulative grade point average (GPA) of 2.0 (A=4.0) must be maintained. A student whose cumulative and/or quarterly GPA falls below 2.0 may enroll for two quarters as a probationary student to attempt to raise his/her cumulative and/or quarterly GPA. (During each interim quarter the student must demonstrate improved academic performance.) If at the end of two quarters the required GPA is not attained, the student may be dismissed. Academic probation is limited to a maximum of two quarters during the entire academic program.

An F or N grade in any course is grounds for dismissal from the program. Permission may be given to retake a course at the discretion of the Progressions and Graduations Committee. If permission is granted, a failed course must be repeated the first time it is offered following the quarter in which the failure occurred. Students are limited to repeating only one clinical course.

Graduate Students. Graduate students who are enrolled in prelicensure coursework must maintain a quarterly and cumulative GPA of 3.0 in graduate course work and a GPA of 2.75 in the prelicensure component of the program. If GPA falls below 2.75 the student may apply or be asked to transfer to the baccalaureate exit option.

Students in all graduate programs must maintain a cumulative 3.0 average in graduate level work in order to remain in good academic standing. A full-time student whose cumulative GPA falls below 3.0 may enroll for one quarter as a probationary student to attempt to raise his/her cumulative GPA. A part-time student is placed on academic probation status for a period of time specified by the Progressions and Graduations Committee. Further enrollment in the graduate program will be denied if the GPA is not raised in the quarter(s) of probation.

A student must achieve an A or B grade in all required clinical nursing courses. If less than a B grade is achieved, a student may repeat the one course with the approval of the Progressions and Graduations Committee, the student's advisor, and the associate dean for education. An F grade in a required clinical nursing course will result in dismissal from the program.

Transfer of Credit. Undergraduate courses taken at an accredited college or university that fulfill the prerequisites for admission may be applied toward the baccalaureate degree. Elective credit required at Rush may be fulfilled by upper division courses taken at another institution. Upper division courses must be at the 300 or 400 level, or their equivalent, and academic in nature. For instance, courses in physical education or applied arts are not accepted. A transfer credit approval form should be completed.

Graduate credit earned elsewhere may be applied to the M.S., N.D. and D.N.Sc. degree requirements for Rush subject to the approval of the advisor and the director of curriculum and instruction. Graduate level courses taken at a recognized college or university may be applied to the N.D. or D.N.Sc. degree requirements at Rush, subject to the approval of the advisor and the director of curriculum and instruction. Credits in excess of 55 quarter hours require approval of the director of curriculum and instruction. Before this credit may be approved to meet degree requirements, a transfer credit approval form must be completed. The form should be completed during the first quarter of enrollment in the degree program.

After matriculation, students who plan to advance the body of knowledge in nursing and its request credit for courses taken elsewhere must either complete a transfer credit approval form or

register for concurrent enrollment. Information regarding either of these options is available in the Office of the Registrar.

Undergraduate Enrollment in Graduate Courses. With permission, undergraduate students may register for graduate level courses. Any credit earned in this manner will automatically apply toward the baccalaureate degree. Should any undergraduate student later apply for and gain admission to a graduate program at Rush University, the student may request that the graduate credit earned be applied toward the master's degree. A transfer credit approval form should be completed.

Credit will transfer in this manner only if the student has enough cumulative credits. A student must earn a minimum of 180 quarter hours to receive the bachelor of science degree. If a student actually earned 187 quarter hours, and seven quarter hours are at the graduate level at Rush, seven quarter hours could potentially be credited toward the master's degree.

Credit by Examination. A student who passes a proficiency examination at Rush University will earn academic credit toward the degree. The credit will equal the credit value of the course as listed in the current *Rush University Bulletin*. Information that is posted on the transcript is the course prefix and number, title, credit value and a K grade. A transcript guide that accompanies all transcripts issued by the Office of the Registrar explains that the K grade means credit was earned through proficiency examination. Credit for the course will appear in the quarterly and cumulative totals as credit earned. The credit is not calculated into the student's GPA. A fee for the examination is assessed based on the number of credits assigned to the course.

Incomplete Grades. The grade of incomplete (I) is normally given only when circumstances beyond the control of the student prevent completion of course requirements and the student has received permission to defer completion of these unmet course requirements. The course director shall determine what work will be required to remove the incomplete and shall establish a specific time within which the student must complete such work.

A grade of incomplete does not reflect upon the quality of the student's performance. Upon completion of the unmet course requirements, this grade will be replaced by the new grade.

Students may request an incomplete from a course director. If the course director grants the privilege of an incomplete, the I grade must be removed as contracted by the course director

and the student. The I grade must be removed by the end of the next quarter, or it will revert to a failing (F or N) grade unless otherwise negotiated by the course director and student.

A student receiving an I grade may proceed for one quarter but may not begin a course for which the incomplete course is a prerequisite. Further continuation is contingent upon the final grade received for the course.

Any exception to these policies for the College of Nursing requires permission from the student's academic advisor, the director of curriculum and instruction and the Progressions and Graduations Committee. A memo to the registrar signed by both of the above individuals must be presented at the time of registration when the exception is to be granted.

Absences. Students are responsible for all material presented in class sessions. Faculty will not be available to students who miss or are late for classes. Students are expected to be in attendance at all seminar and clinical practice periods and are responsible for all content presented therein. When illness or other special circumstances prevent attendance, the student is responsible for contacting the instructor (in advance, if possible) to plan for meeting the objectives on an individual basis. Students absent from an examination are responsible for notifying the course director according to the guidelines specified in the course syllabus. Failure to do so will result in a zero for that examination or an incomplete for the course as determined by the course director.

Examination Policy. The examination policy is the responsibility of the individual course director who will inform students of examination requirements for that particular course. A period at the end of the quarter is provided for examinations. This period may be used as the course director chooses.

Leave of Absence. A student who must interrupt his/her studies for reasons of sustained ill health or compelling personal situations may apply for a leave of absence for a stated period of time, usually not to exceed one year. Leave of absence requests must be submitted in writing to the Progressions and Graduations Committee. Students who must interrupt study must consult with their academic advisor and submit a revised program of study to the Progressions and Graduations Committee. Nursing students must be in good academic standing to be considered for approval. If approved by the committee and the director of student support services, the student must satisfy the conditions of the leave

before reentering and must comply with all policies, requirements and course sequences in effect at the time of reentry. At least three months in advance of reenrollment, the student shall notify in writing his/her advisor and the Progressions and Graduations Committee of his/her intent to return. (See Academic Information section for additional requirements.)

Readmission. Any student who has withdrawn from a program or has not been enrolled for two consecutive quarters or any dismissed student may apply for readmission by submitting an application for this purpose to the Office of College Admissions Services. Applications for reenrollment must be received at least three months before the planned return. An interview may be required. A reentering student must meet the conditions for reenrollment stated in his/her dismissal or reentry acceptance letter and all policies, requirements and course sequences in effect at the time of reentry. The student will pay tuition and fees at the rates in effect at the time of reenrollment.

Nursing students who received an unacceptable grade in courses which resulted in dismissal must repeat the course upon their reinstatement. The hour and grade points of the second grade only will be counted in the cumulative GPA.

Graduation Requirements. The Bachelor of Science degree with a major in nursing requires a minimum of 180 quarter hours. At least 90 quarter hours are used to fulfill the prehealth curriculum. The remaining 90 quarter hours constitute the upper division curriculum of which eight quarter hours may be upper division electives.

A minimum of 45 quarter hours shall be spent as an upper division student in academic residence at Rush University. R.N.'s completing

the baccalaureate degree must complete 36 hours in residence at Rush. Credit earned through proficiency examination may not be used to meet this requirement.

Candidates for the B.S. degree must earn a 2.0 cumulative GPA in all required nursing courses. Finally, a 2.0 cumulative GPA must be earned in all computed upper division credits taken at Rush University.

During the fourth year, all students are expected to participate in comprehensive examinations which assist faculty in counseling students for licensure examination and are used for program evaluation. However, no minimum score is required.

Participation at commencement is expected of all graduates.

After receiving the baccalaureate degree, graduates are eligible to write the National Council Licensure Examination for Registered Nurses.

The Master of Science degree in nursing requires a minimum of 55 quarter hours and must include all coursework and residencies required for the selected area of concentration. No less than 27 quarter hours shall be spent in residence at Rush University for the M.S. degree.

The Doctor of Nursing degree requires a minimum of 85 quarter hours of study and must include all coursework and residencies required for the selected area of concentration. No less than 27 quarter hours shall be spent in residence at Rush University for the N.D. degree. Prelicensure coursework is additional.

The Doctor of Nursing Science degree requires completion of the approved individual program of study. Course work for the D.N.Sc. must be the equivalent of 125 quarter hours of graduate credit in addition to the completed dissertation.



"The faculty of the College of Health Sciences, through the unification of their academic and operational responsibilities, strive to develop leaders for the future of health care in an array of the allied health professions. The hallmarks of scholarly excellence are the excitement of discovery, its communication to others and its application to the field. With faculty and students as colleagues, these are what we seek at Rush."

John E. Trufant, Ed.D.
Dean, College of Health Sciences
Vice President, Academic Resources



COLLEGE OF HEALTH SCIENCES

The College

The College of Health Sciences, founded in 1975, is responsible for education and research in the allied health professions. More than six of every ten health care workers in the United States is in allied health. Over fifty separate categories of professionals comprise this largest segment of the health care workforce.

The faculty of the College of Health Sciences serve the Medical Center as practitioner-teachers. Nearly all have patient care or service responsibilities while concurrently filling academic roles as teachers and investigators. Through the faculty, therefore, the students have access to the latest treatment and practice patterns of skilled clinicians in a dynamic academic health center.

Mission

The primary mission of the College of Health Sciences of Rush University is to provide high quality educational programs for students in selected health sciences disciplines in order to prepare them for professional careers and/or further education. The faculty of the College, in recognizing the central role of the discovery of new knowledge to quality education, clinical excellence, and professional enhancement, foster research activities among themselves, their colleagues and their students; and, they encourage dissemination of the results through their writing and speaking in both internal and external forums. To develop the health team concept, the faculty encourages interdisciplinary activities in education, research and service. The faculty provide service to other programs through their educational and research activities. Contributions of professionals to the health care community are encouraged. Education and clinical components are integrated so that each has a positive effect on the quality and development of the other. Faculty strive to assure standards of excellence in their professions by achieving leadership positions, by pursuing and providing continuing education, by serving their communities, and by commitment to evaluating themselves, their programs and their organizational arrangements. The faculty and administration operate efficiently through responsible stewardship of resources in their care. Further, the faculty plans systematically for the future by monitoring trends and

environmental conditions as they may impact the health sciences.

Organization

The organization of the College of Health Sciences centers around seven departments, each headed by a department chairperson. The chairpersons report to the college dean. The senior representative policy body of the College is the College Council, comprised of two faculty members from all of the departments and students from the College at large. Meeting of the Council are held each month. Faculty and students may propose agenda items, and guests are welcome by invitation.

The seven departments of the College, each described later in the section, include Medical Technology, which offers a Bachelor of Science degree. Five departments offer Master of Science degrees---Communication Disorders and Sciences, Clinical Nutrition, Health Systems Management, Medical Physics and Occupational Therapy. In addition, the College includes the Department of Religion and Health, which offers internships in Clinical Pastoral Education. The Section of Ethics is also organized as part of this department.

Alumni Activities

The College encourages the development of strong ties with its graduates. All graduates are considered alumni of Rush University, and no dues are levied. Each of the programs in the College of Health Sciences has its own alumni organization.

Academic Policies.

(Additional policies are listed in the Academic Information section and in the program descriptions.)

Credit Hours. Rush University is on a quarter system. Each quarter is at least ten weeks in length. An examination period is provided at the end of each term, and most instructors give a final examination during this time. The quarter hour is the unit used by the College of Nursing, the College of Health Sciences, and The Graduate College to determine credit for courses taken. As a general rule one quarter hour represents contact time of one lecture hour, two hours of

small group discussion or three laboratory or clinical hours per week.

Transfer of Credit. Undergraduate courses taken at an accredited college or university that fulfill the prerequisites for admission may be applied toward the baccalaureate degree.

Graduate credit earned elsewhere may be applied to the master of science degree requirements for Rush, subject to the approval of the department chairperson. Before this credit may be approved to meet degree requirements, a transfer credit approval form must be completed. The form should be completed during the first quarter of enrollment in the degree program.

After matriculation, students who plan to request credit for courses taken elsewhere must either complete a transfer credit approval form or register for concurrent enrollment. Information regarding either of these options is available in the Office of the Registrar. Prior approval by the department chairperson is required.

Credit by Examination. A student who passes a proficiency examination at Rush University will earn academic credit toward the degree. The credit will equal the credit value of the course as listed in the current *Rush University Bulletin*. Information that is posted on the transcript is the course prefix and number, title, credit value and a K grade. A transcript guide that accompanies all transcripts issued by the Office of the Registrar explains that the K grade means credit was earned through proficiency examination. Credit for the course will appear in the quarterly and cumulative totals as credit earned. The credit is not calculated into the student's grade point average (GPA). Credit by examination is not available for all courses or in all programs. Availability of proficiency examinations is at the discretion of the department chairperson and the faculty.

Full-time and Part-time Enrollment.

Twelve quarter hours is considered full-time enrollment. Registration for fewer than twelve hours constitutes part-time enrollment.

Undergraduate Enrollment in Graduate Courses.

With permission, undergraduate students may register for graduate level courses. Any credit earned in this manner will automatically apply toward the baccalaureate degree. Should an undergraduate student later apply for and gain admission to a graduate program at Rush University, the student may request that the graduate credit earned be applied toward the master's degree. A transfer credit approval form should be completed.

Credit will transfer in this manner only if the student has enough cumulative credits. A student must earn a minimum of 180 quarter hours to receive the bachelor of science degree. If a student actually earns 187 quarter hours, and seven quarter hours are at the graduate level at Rush, seven quarter hours could potentially be credited toward the master's degree.

Incomplete Grades. The grade of incomplete (I) is normally given only when circumstances beyond the control of the student prevent completion of course requirements, and the student has received permission from the course director to defer completion of these unmet course requirements. The course director shall determine what work will be required to remove the incomplete and shall establish a specific time within which the student must complete such work.

An incomplete grade does not reflect upon the quality of the student's performance, and upon completion of the unmet course requirements, this grade will be replaced by the new grade.

Medical Technology. Students receiving grades of incomplete are responsible for asking the instructor for the exact work required to remove the incomplete. Work ordinarily shall be completed and a letter grade received by the end of the fifth week of the next quarter the student is enrolled or sooner at the discretion of the course director.

Graduate Students. Graduate students may request an incomplete from the course director. An incomplete grade not removed by the end of the next quarter will revert to a final grade as determined by the course director.

Absences. Students are responsible for all material presented in class sessions. Faculty members are not obligated to provide extra help to students who miss or are late for classes. When illness or other special circumstances prevent attendance, the student is responsible for contacting the instructor (in advance, if possible) to plan for meeting the objectives on an individual basis. Students absent from an examination are responsible for notifying the course director according to the guidelines specified in the course syllabus. Failure to do so will result in a zero for that examination or an incomplete for the course as determined by the course director.

Examination Policy. The examination policy is the responsibility of the individual course director who will inform students of examination requirements for that particular course. A period at the end of the quarter is provided for examinations. This period may be used as the course director chooses.

Dean's List. Undergraduate students earning a 3.5 (A=4.0) or higher GPA for at least twelve credits of classroom course work are recognized by having their names placed on the Dean's List. The Dean's List is published at the beginning of each new quarter for work completed in the previous quarter.

Thesis. Several programs in the College of Health Sciences either required or have an option for a thesis project. Completing one's thesis is a significant academic accomplishment and acknowledges that the student has conducted an independent scientific investigation that will add to the knowledge in their field. All students are required to have their theses registered with University Microfilms, Inc. This process includes the publication of the thesis abstract, the microfilming of the thesis, and the copyrighting of the the work. In addition, the original copy of the thesis is bound and becomes a permanent part of the collection of Rush University. The director of the Library of Rush University coordinates this process.

Leave of Absence. A student who must interrupt his/her studies for reasons of sustained

ill health or compelling personal situations may apply for a leave of absence for a stated period of time, usually not to exceed one year. Leave of absence requests must be submitted in writing to the department chairperson or his/her designate. If approved by the department chairperson and dean, the student must satisfy the conditions of the leave before reentering and must comply with all policies, requirements and course sequences in effect at the time of reentry. The student shall provide to the administrator(s) who granted the leave written notice of his/her intent to return. The student will pay tuition and fees at the rates in effect at the time of reenrollment. (See Academic Information section for additional requirements.)

Readmission. Any student who has withdrawn from a department or has not been enrolled for two consecutive quarters or any dismissed student may apply for readmission by submitting an application for this purpose to the department chairperson of the department to which he/she is applying. Applications for reenrollment must be received at least three months before the planned return. An interview may be required. A reentering student must meet the conditions for reenrollment stated in his/her dismissal or reentry acceptance letter and all policies, requirements and course sequences in effect at the time of reentry. The student will pay tuition and fees at the rates in effect at the time of reenrollment.

Student Appeals Process. A student wishing to appeal an academic decision should follow the process summarized below, in the sequence indicated.

1. Discuss and attempt to resolve the issue with the faculty member in question.
2. Discuss the issue with the department chairperson (or with the program director, if applicable).
3. Submit a written appeal to the student progress and promotion committee of the department.
4. Submit a written request for a hearing to the University Committee on Faculty and Student Appeals. The recommendation of this committee will be forwarded to the College Council and the dean for review and final determination.

Department of Clinical Nutrition

Philosophy

The primary mission of the Department of Clinical Nutrition is to develop clinical nutrition practitioners who are prepared to assume leadership roles in the profession of dietetics. The program is designed to teach students to integrate and apply principles of food, nutrition, and administrative sciences in order to improve the nutritional status of individuals and groups. The importance of maintaining a current knowledge base and incorporating new knowledge into practice patterns is emphasized throughout the program.

The philosophy of the department parallels that of the Medical Center in that the academic component is fully integrated with the health care function of the institution. The faculty is committed to excellence in teaching, research, and clinical care and strives to be visionary in meeting the future needs of the profession in a changing health care environment.

The Program

A two-track program having a common core of courses and leading to a master of science degree with a major in clinical nutrition is offered.

Track I is an 18-month dietetic internship /master's degree program that integrates didactic and practicum experience. On completion of the program the student is eligible to take the registration examination for dietitians.

Track II is designed for the registered dietitian who wishes to expand his/her understanding of advanced human nutrition, clinical management techniques, and the research process.

Admission Requirements. The student must hold a baccalaureate degree from an accredited college or university and provide evidence of having successfully completed a college course in basic statistics

The generally applied minimum standards for acceptance into the program are a B average for undergraduate achievement and a combined verbal and quantitative score of 1000 on the Graduate Record Examination taken within the

last three years. In addition, evidence of work experience in food service systems and/or clinical dietetics is highly recommended.

Track I students must provide evidence of having completed the minimum academic requirements necessary for membership in the American Dietetic Association (designated as Plan IV/V).

Track II students must provide evidence of dietetic registration.

Academic Progression. The faculty reserves the right to request the withdrawal of any student whose conduct, health, or performance demonstrates lack of fitness for continuance in a health profession.

Only grades of A, B or C fulfill degree requirements in all required courses except supervised experience in which a grade of B or above is required. A student who earns a C in a supervised experience must repeat the course. A grade of D or F in a supervised experience results in dismissal from the University.

Automatic probation results when a student's cumulative grade point average (GPA) falls below 3.0 or when a student receives a grade of F in any course other than supervised experience. The Committee on Academic Progress and Promotions notifies any student placed on probation, states the reason(s) for probation and the conditions that must be satisfied for removal of probationary status.

A student who earns a grade of D or F in a required course, except supervised experience, must repeat the course. Failure to earn a grade of C or better in a repeated course results in dismissal from the program. A student who earns a grade of D or F in two or more required courses will be dismissed from the University. In a repeated course, the new grade replaces the earlier D or F grade in the cumulative GPA.

Full-time students placed on probation must earn a cumulative GPA of 3.0 or greater by the end of the next two consecutive quarters. Part-time students placed on probation must earn a cumulative GPA of 3.0 or greater after completing the next 25 credit hours. Improvement in GPA must be demonstrated each quarter of probation.

Curriculum: Clinical Nutrition

Fall Quarter		Track I	Quarter Hours
NTR 521	Human Metabolism I		3
PVM 541	Biostatistics I		4
NTR 503	Management in Dietetics		3
NTR 511	Supervised Experience in Food Service Management I		3
			<hr/> 13
Winter Quarter			
NTR 522	Human Metabolism II		3
NTR 582	Introduction to Research		1
NTR 583	Applied Research in Management		1
NTR 512	Supervised Experience in Food Service Management II		3
HSM 574	Health Care Delivery Systems		2
NTR 572	Nutrition Communications I		2
			<hr/> 12
Spring Quarter			
NTR 541	Interrelationships of Nutrition & Disease I		4
NTR 582	Introduction to Research		2
NTR 586	Applied Nutrition Research Problem I		2
NTR 505	Clinical Diet Therapy I		2
NTR 513	Supervised Experience in Clinical Dietetics I		3
			<hr/> 13
Summer Quarter			
NTR 542	Interrelationships of Nutrition & Disease II		4
NTR 573	Nutrition Communication II		1
NTR 587	Applied Nutrition Research Problem II		2
NTR 506	Clinical Diet Therapy II		2
NTR 514	Supervised Experience in Clinical Dietetics II		3
			<hr/> 12
Fall Quarter			
NTR 590	Special Topics		1
NTR 565	Seminar I		1
NTR 588	Applied Nutrition Research Problem III		2
NTR 515	Supervised Dietetic Staff Experience		5
	Electives		3
			<hr/> 12
Winter Quarter			
NTR 566	Seminar II		1
NTR 574	Management in Nutrition Care Systems		3
NTR 592	Individualized Clinical Practice		1
	Electives (optional)		1
			<hr/> 6
TOTALS		Required hours	64
		Elective hours	4
		Minimum Hours Required for Graduation	68

Curriculum: Clinical Nutrition

Fall Quarter		Track II	Quarter Hours
NTR 521	Human Metabolism I		3
PVM 541	Biostatistics I		4
NTR 590	Special Topics		1
NTR 565	Seminar I		1
	Electives		<u>9</u>
Winter Quarter			
NTR 522	Human Metabolism II		3
NTR 582	Introduction to Research		1
NTR 574	Management in Nutrition Care Systems		1
NTR 566	Seminar II		3
NTR 572	Nutrition Communication I		2
HSM 574	Health Care Delivery Systems		2
			<u>12</u>
Spring Quarter			
NTR 541	Interrelationships of Nutrition & Disease I		4
NTR 582	Introduction to Research		2
NTR 585	Applied Nutrition Research		3
	Electives		<u>9</u>
Summer Quarter			
NTR 542	Interrelationships of Nutrition & Disease II		4
NTR 573	Nutrition Communication II		1
NTR 585	Applied Nutrition Research		6
	Electives		<u>11</u>
TOTALS		Required hours	41
		Elective hours	13
		Minimum Hours Required for Graduation	54

Academic Policies

(Additional policies are listed in the College of Health Sciences and in the Academic Information sections.)

Full-time and Part-time Enrollment.

Track I (combined dietetic internship/master's degree program) is offered on a full-time basis only. The program extends over six quarters including a summer session.

Track II (master's degree program for registered dietitians) is offered on a part-time basis only. The program may be completed in six quarters or longer, up to five years.

Graduation Requirements.

A cumulative GPA of 3.0 or greater is required of all graduates.

Track I students shall complete a minimum of 68 quarter hours within 36 months of the beginning of the first quarter of enrollment in the program.

Track II students shall complete a minimum of 54 quarter hours within five years from the beginning of the first quarter of enrollment in the program.

Research Activities

The faculty of the Department of Clinical Nutrition is involved in both basic and clinical research. This activity frequently is in collaboration with Rush Medical College faculty members in such departments as oncology, surgery and preventive medicine. A research laboratory is available to support faculty and student research.

Service Activities

The General Internship/Master's Degree Program is administered by the Department of CLinical Nutrition, Rush University. The major portion of the practicum experience is provided within the facilities of the Food and Nutrition Services Department, Rush-Presbyterian-St. Luke's Medical Center. The academic service departments are organized under one director allowing full integration of operational and academic facilities/staff. This organizational structure provides unique opportunities for the merging of theory and practice within one institution.

In addition to the academic program, the Department provides nutrition services to the hospital and to the outpatient area, operates four food service units within the Medical Center and provides leadership in nutritional support in critical care.



Department of Communication Disorders and Sciences

Philosophy

The basic tenet of the faculty in the Department of Communication Disorders and Sciences is that the professional education of speech-language pathologists and audiologists, who desire practice in hospitals or other health care facilities, is optimized by drawing upon patients, staff and physical resources of an academic medical center. In contrast to many professional training programs, the clinical skills of Rush students are fostered and matured through observation and supervision by practitioner-teachers. All faculty members are certified by the American Speech-Language-Hearing Association (ASHA) and participate fully in the clinical process, serving patients that present a full range of communication disorders. In addition to close clinical supervision, which provides the necessary foundation for clinical education, the faculty developed a curriculum that meets ASHA standards. This faculty is supplemented by the expertise of physicians, scientists, and other health care personnel within the Medical Center. Additionally, the faculty's commitment to research and the belief that an appreciation of scientific matters is valuable to the clinical process and professional growth provide the basis for master's thesis research in the program.

Admission Requirements

Applicants should be eligible for the baccalaureate degree at accredited institutions at the time of application. The baccalaureate degree must be completed before commencing course work at Rush University. An applicant's record must reflect successful completion of course work in at least the following content areas: introduction to communication disorders, introduction to audiology, introduction to psychology, phonetics and normal articulatory production, normal language development, speech and hearing science and clinical methods or practicum. Also, course work in the following content areas is strongly recommended: diagnostics, disorders of articulation, abnormal psychology, behavior modification, developmental psychology, physiological psychology, introduction to linguistics, computer

science, statistics/mathematics, physics and English composition.

Admission is typically granted for the fall quarter of each year. The completed application file includes an application form, application fee, three letters of recommendation from individuals acquainted with the applicant's academic or professional background, official transcripts from all universities and colleges attended and official scores from either the Graduate Record Examination (GRE) or the Miller Analogies Test (MAT). A minimum 3.0 undergraduate grade point average overall (on a 4.0 scale) or a 3.5 in major courses in speech pathology/audiology or a 3.5 in the prerequisite course content as listed in the application is required for an automatic interview. Applicants who do not meet the minimum GPA for an automatic interview will have their applications reviewed by the admissions committee who will make determination regarding eligibility for interview. The decision of the review committee is final.

Academic Policies

(Additional policies are listed in the College of Health Sciences and in the Academic Information sections.)

Academic Progression. The faculty reserves the right to request the withdrawal of any student whose conduct, health or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University. Appeal of dismissal must be made in writing to the department chairman for consideration by the faculty.

Only grades of A, B or C fulfill degree requirements in all required courses as listed in the curricular outline. Students will be considered in good standing at Rush University unless placed on academic probation. Due to the nature of the programs, clinical performance and classroom performance will be evaluated separately. Policies related to academic progression will be applied to each independent of the other.

Academic probation is assigned to a student who earns a quarterly GPA between 2.0 and 2.99

(A=4.0), inclusive, or whose cumulative GPA falls below 3.0. Full-time students placed on probation must earn a cumulative GPA of 3.0 or greater at the end of the next consecutive quarter. Part-time students placed on probation must earn a cumulative grade point average of 3.0 or greater by the end of the next two consecutive quarters.

A student who earns a quarterly grade point average below 2.0 will be dismissed from the University. A student who earns a grade of less than C in a required course must repeat that course, an equivalent course, or an alternative course. Petitions in this regard will be reviewed by the Curriculum Committee of the department with final approval or denial by the faculty.

Curriculum: Audiology

Fall Quarter	Year I	Quarter Hours	Fall Quarter	Year II	Quarter Hours
SHS 545	Anatomy and Physiology of Speech & Hearing	3	SHS 532	Advanced Hearing Aids	3
SHS 546	Anatomy & Physio. Lab	1	SHS 526	Industrial Audiology	2
SHS 507	Neurological Bases of Speech and Hearing	3	SHS 597	Case Presentation	1
SHS 501	Speech & Hearing Sciences I	3	SHS 589	Research Practicum	3
SHS 585	Professional Issues I	1	SHS 520	Audiology Practicum V	3
SHS 516	Audiology Practicum I (includes 1 cr. of lecture)	3			
		14			12
Winter			Winter		
SHS 502	Speech / Hearing Sciences II	3	SHS 548	Advanced Electrophysiologic Assessment	3
SHS 582	Introduction to Research	4	SHS 575	Issues in Counseling	3
SHS 531	Amplification for the Hearing Impaired	3	SHS 586	Professional Issues II	1
SHS 506	Audiology II	3	SHS 595	External Practicum	6
SHS 517	Audiology Practicum II	3			
		16			13
Spring			Spring		
SHS 553	Instrumentation for Hearing and Speech	3	SHS 595	External Practicum	1
SHS 543	Electrophysiologic Assessment of the Auditory System	4			1
SHS 533	Adult Aural Rehabilitation	3			
SHS 566	Pathophysiology of the Auditory System	3			
SHS 518	Audiology Practicum III	3			
		16			
Summer					
SHS 523	Sign Language	2	Total		87
SHS 534	Pediatric Aural Rehabilitation	3	Electives		2
SHS 542	Electronystagmography	3			
SHS 550	ENG Lab	1	Minimum Required for Graduation		89
SHS 544	Pediatric Audiology	3			
SHS 519	Audiology Practicum IV	3			
		15			

A student who earns a grade of less than C in two or more required courses may be dismissed from the University. In a repeated course, the new grade will replace the earlier failing grade in the cumulative GPA. Failure to earn a grade of C or better in a repeated course will result in dismissal from the University.

Students placed on academic probation will be notified in writing by the department chairperson following a meeting of the faculty at

which academic progress has been discussed. The letter will state the reasons for placing the student on academic probation and the specific requirements that must be met by the student to reestablish good standing.

Graduation Requirements. The master of science degree with a major in either speech-language pathology or audiology requires a cumulative GPA of 3.0 or greater to graduate. All degree requirements must be completed within

Curriculum: Speech-Language Pathology

Fall Quarter	Year I	Quarter Hours	Fall Quarter	Year II	Quarter Hours
SHS 501	Speech & Hearing Sciences I	3	SHS 568	Cognitive Disorders	3
SHS 507	Neurological Bases of Speech & Hearing	3	SHS 561	Articulation Disorders	4
SHS 545	Anatomy and Physiology of Speech & Hearing	3	SHS 575	Case Presentation	1
SHS 546	Anatomy & Physio. Lab	1	SHS 589	Research Practicum	3
SHS 585	Professional Issues I	1	SHS 515	Speech-Language Practicum V	3
SHS 511	Speech-Language Practicum I (includes 1 cr intensive Audiology work)	3			14
		14			
Winter			Winter		
SHS 502	Speech & Hearing Sci. II	3	SHS 575	Issues in Counseling	3
SHS 564	Aphasia	4	SHS 524	Fluency, Dysfluency, and Stuttering	3
SHS 582	Intro. to Research Design	4	SHS 586	Professional Issues II	1
SHS 556	Swallowing I: Diagnosis	1	SHS 595	External Practicum	6
SHS 512	Speech-Language Practicum II	3			13
		15			
Spring			Spring		
SHS 533	Instrumentation for Hearing and Speech	3	SHS 590	External Practicum	1
SHS 565	Motor Speech Disorders	3			1
SHS 551	Diagnostic Methods	3			
SHS 533	Adult Aural Rehabilitation	3			
SHS 557	Swallowing II: Management	1			
SHS 513	Speech-Language Practicum III	3			
		16			
Summer					
SHS 563	Voice Disorders	4		Total	87
SHS 522	Language Disorders in Children	3		Electives	2
SHS 562	Craniofacial Anomalies	3			
SHS 558	Swallowing III: Instrumentation	1		Minimum Required for Graduation	89
SHS 514	Speech-Language Practicum IV	3			
		14			

48 months from the beginning of the first quarter in which the student is enrolled in the department. The minimum number of quarter hours required for graduation is 89

Professional Certification

Programs in communication disorders and sciences provide the academic background necessary to sit for the national certification examination and to begin the clinical fellowship year.

Practicum

Supervised clinical practica occur each quarter during the seven-quarter program. A minimum of 22 quarter hours of clinical practicum is required. These experiences include those at selected sites inside and outside of the Medical Center. Opportunities provide experiences with a full range of speech, language and hearing disorders. Students are able to express their preferences with regard to practicum sites outside the Medical Center.

Educational Activities

The Department of Communication Disorders and Sciences provides professional training in speech-language pathology and audiology. Its programs are two of the few in the United States that base the education of speech pathologists and audiologists on the facilities and

opportunities offered by an academic medical center. In addition to teaching and supervisory responsibilities for the master of science degree programs in the College of Health Sciences, faculty members involve themselves in articulating the practical and service aspects of communication disorders through resident, clerkship, and inservice programs at Presbyterian-St. Luke's Hospital.

Research Activities

In the recent past, faculty and graduate students have collaborated on a number of research projects. Faculty-student collaborative projects were presented at state and national meetings. The Department of Communication Disorders and Sciences continues to be involved in numerous cross-departmental and interinstitutional investigations in the areas of audiology, hearing science, and speech-language pathology.

Service Activities

The faculty provides a full range of diagnostic and therapeutic services for the communicatively impaired through the Section of Communicative Disorders, Department of Otolaryngology and Bronchoesophagology. Faculty has demonstrated considerable expertise in developing specialized evaluative and treatment programs for the communicatively handicapped. Both inpatients and outpatients are served.

Department of Health Systems Management

Philosophy

The Department of Health Systems Management was formally established in 1975. The department's goals are to provide a graduate program for future health systems managers; to provide postgraduate and continuing education for health systems managers and to conduct research in order to validate and to further innovation in the management of health care services.

Admission Requirements

Prospective students should have a baccalaureate degree from an accredited college or university with basic course work in financial accounting and statistics. Courses in macro- and microeconomics and computer science are strongly recommended. Applicants are also required to submit scores from either the Graduate Management Aptitude Test (GMAT) or the Graduate Record Examination (GRE), three confidential letters of recommendation and official transcripts.

Curriculum

Comprised of six academic quarters, the curriculum is designed to instruct students in the current theory and practice of health services management including the study of organizational behavior, quantitative and analytical techniques, planning, finance, and human resources management. The structure of the curriculum allows students the opportunity to apply managerial principles in real world learning environments and to design and conduct applied research projects.

Curriculum content focuses on the following:

- an understanding of health services administration through a study of health economics and medical sociology
- knowledge of individual social and environmental determinants of health, disease and disability through a study of health measurement, patterns and characteristics of illness, health promotion, and disease intervention

- an understanding of management and administrative skills and their application to health services organizations through a study of organizational behavior, quantitative methods, budgeting, information systems, law, planning and policy development, marketing, manpower planning, personnel management, labor relations, multi-institutional arrangements, long-term care, ambulatory care, and managerial decision making

Academic Progression. All graduate students in the Department of Health Systems Management must achieve a grade point average of 3.0 (A=4.0) in all course work each quarter to maintain satisfactory academic status. Academic probation results when a student's grades fall below a quarterly or cumulative grade point average of 3.0 or when a student receives a grade of F in any course. Any health systems management student may be placed on academic probation when the student's academic deficiencies are significant as judged by the Committee on Progress and Promotions. A student on academic probation shall remain so until he/she has remedied all deficiencies and has met all requirements established by the Committee on Progress and Promotions for removal from academic probation.

Academic Policies

(Additional policies are listed in the College of Health Sciences and in the Academic Information sections.)

Full-time Enrollment. The curriculum is offered full time only. A full-time student is one who is registered for 12 or more hours of course credit per quarter leading toward a master's degree with a major in health systems management.

Graduation Requirements. To be eligible to graduate, a student must have successfully completed all the academic requirements of the Department of Health Systems Management and

Curriculum: Health Systems Management

Fall Quarter		Year I	Quarter Hours
HSM 502	Health Care Organization I	W. Lerner	4
HSM 503	Health Care Organization II	W. Lerner	1
HSM 506	Medical Sociology	M. Counte/ P. Volek	3
HSM 582	Intermediate Statistics	D. Mon	4
HSM 551	Information Systems I	B. Serxner/ R. Odwazny	4
Winter Quarter			
HSM 571	Operations Management	S. Riehs	4
HSM 515	Human Resources Management I	J. Hill	4
HSM 533	Health Economics	G. Kaatz/G Glandon	4
HSM 545	Organizational Analysis	J. Trufant	4
Spring Quarter			
HSM 552	Information Systems II	S. Jaworski	4
HSM 543	Health Law	M. Brown	4
HSM 507	Epidemiology	D. Oleske	4
HSM 531	Finance I	G. Gasbarra	4
Fall Quarter		Year II	
HSM 561	Strategic Planning	K. Holloman	3
HSM 536	Corporate Finance	B. Koval	4
HSM 597	Graduate Project	D. Oleske	4
	Elective (choose one from the two listed)		
HSM 583	Advanced Statistics	L. Thompson	3
HSM 534	Applied Economics	G Glandon	3
Winter Quarter			
HSM 562	Marketing Management	C. Newman	3
HSM 532	Finance II	T. Jendro	3
HSM 597	Graduate Project	D. Oleske	4
	Elective (choose one from the four listed)		
HSM 557	Quality Assurance in Health Care	M. Terman	3
HSM 576	Ethics for Health Care Management	R. Burke	3
HSM 567	Managed Care	L. Lourie	3
HSM 522	Multi-Institutional Arrangements	G. Bass/A. Miller	3
Spring Quarter			
HSM 546	Advanced Organizational Analysis	M. Counte/J. Short	4
HSM 539	Finance Seminar	K. Necas/M. Cirone	3
HSM 595	Graduate Seminar	M. Sinioris/ G Glandon	1
	Elective (choose one from the three listed)		
HSM 535		G. Kaatz	3
HSM 572	Applied Economics II	W. Wellman	3
HSM 553	Advanced Operations Research	T.B.A.	3
	Advanced Information Systems		
	Elective (choose one from the four listed)		
HSM 516		J. Hill/B. Perret	3
HSM 555	Human Resources Management II	T.B.A.	3
HSM 558	Health Care and the Elderly	P.Kempinski/D. Bliss	3
HSM 560	Ambulatory Care Management	I. Shannon	3
	Health Care Policy		

chieved a minimum cumulative grade point average of 3.0. In order to receive a master of science degree with a major in health systems management, the student must have earned a minimum of 91 quarter hours of credit. Prior to graduation, the Committee on Progress and Promotions shall recommend to the entire department faculty for its approval those students who are to be awarded degrees.

Educational Activities

Members of the faculty have represented the institution by presenting papers or serving as members of the program faculty in symposia or seminars sponsored by the American Hospital Association, the Hospital Financial Management Association, the American College of Healthcare Executives, the Hospital Management Systems Society, the Illinois Hospital Association and many other professional groups. Each year the Department of Health Systems Management and the Center for Health Management Studies sponsor the annual Rush Invitational Seminar on Hospital and Health Affairs. This past year's symposium, "Regional Health Care Systems: Development, Implementation and Implications" was attended by a record number of health care executives from across the nation.

Research Activities

The Center for Health Management Studies is the focus for the ongoing development of health services research in the Department of Health Systems Management and the Medical Center. Research enables Rush to continue its national prominence as an innovator and pioneer in health

care delivery. The output of the department's health services research can most effectively contribute to the evolution of public policy and to an environment of practice supportive of an efficient and effective health care delivery system. On occasion, students are given the opportunity to participate as research assistants to develop further their skills and perspectives.

The department sponsors monthly research seminars that provide a forum for health systems management faculty to present and discuss their research activities with interested students, faculty and practitioners from throughout the community.

Service Activities

Members of the faculty of the Department of Health Systems Management are actively involved in the operation of the Medical Center through such capacities as hospital administrator, health care planner, University administrator, financial manager, clinician, corporate and labor attorney, researcher, and data processing manager.

Individuals on the faculty, depending on their areas of expertise, frequently are asked to serve as consultants to hospitals, planning bodies, and other organizations.

Additional contributions to the health care field also include serving as faculty in continuing education programs for health service administrators sponsored by the American Hospital Association, the Hospital Financial Management Association, the American College of Healthcare Executives, the Hospital Management Systems Society and the American Association of Medical Colleges.

Department of Medical Physics

Philosophy

The Department of Medical Physics offers two programs of study and research leading to graduate degrees. The faculty members of the division are active in theoretical and experimental research in medical physics and its clinical applications. The diversity of interests of the faculty allows the department to offer a program that can satisfy the interests and needs of students in several areas of medical physics: dosimetry, imaging applied to medicine, radiation sources, physics of radiation therapy, physics of diagnostic radiology, physics of nuclear medicine and radiation protection.

Career Opportunities

Medical Physics is concerned with the application of the concepts, methods and forces of physics to the diagnosis and treatment of human disease. Medical physicists work at the forefront of medical science, often in hospitals with associated academic programs. They carry out research, give direct assistance to their medical colleagues and help train future medical physicists, resident physicians, medical students and medical technicians.

The Program

The master of science with a major in medical physics program is offered through the Department of Medical Physics. In order to produce well-rounded, highly competent medical physicists, the curriculum provides training in the physics aspects of radiation therapy, diagnostic radiology, nuclear medicine, radiation protection, and radiobiology, as well as in such subjects as anatomy, physiology, and computer science. The recommended curricular sequence follows.

Admission Requirements

The successful applicant must meet the following requirements:

- hold a bachelor of science degree in physical science with a minor in physics from an accredited college or university
- complete one year of college chemistry with laboratory. This requirement may be satisfied within the M.S. program.
- earn a cumulative grade point average (GPA) of at least 2.5 ($A = 4.0$) in college work
- earn a cumulative science GPA of at least 3.0 in college work
- submit Graduate Record Examination (GRE) results achieved within the last three years
- supply three letters of recommendation from previous college or university instructors
- provide evidence of prior success in pursuing independent study
- write a description of his/her scientific research interests

Applicants holding a baccalaureate degree but with no graduate training should apply for the fall quarter to insure appropriate course sequencing. Such applications will be accepted until February 15 with notification to the applicant of admissions committee action no later than April 15. Later applications may be accepted on a space available basis.

Students with graduate school or scientific research experience may apply for admission to begin study any quarter of the year. Such applications should be made at least two months prior to the start of classes for the quarter in question.

Academic Policies

(Additional policies are listed in the College of Health Sciences and in the Academic Information sections.)

Academic Progression. The faculty reserves the right to request the withdrawal of any student whose conduct, health or performance demonstrates lack of fitness for continuance in a health profession. Any such student not

Curriculum: Medical Physics

Fall Quarter	Year I	Quarter Hours	Fall Quarter	Year II	Quarter Hours
MPH 482	Therapeutic Radiation Physics	3	MPH 460	Intro. to Radiation Safety/ Diagnostic Radiological Physics	3
MPH 501	Radiation Physics	4	MPH 463	MR Imaging	3
PHY 555	Physiology of Cell Homeostasis	6	MPH 483	Dosimetry Applied to Therapeutic Radiology	4
		<u>13</u>	MPH 505	Radiation Physics Lab	3
					<u>13</u>
Winter			Winter		
MPH 457	Radiation Safety of Radiological Materials	2	MPH 458	Radiation Safety Lab	2
MPH 484	Brachtherapy Physics	2	MPH 465	Computer Imaging	2
MPH 502	Radiological Physics I	4	MPH 481	Intro. to Therapeutic Radiation Physics	3
MPH 505	Radiation Physics Lab	4	MPH 505	Radiation Physics Lab	3
		<u>12</u>			<u>10</u>
Spring			Spring		
MPH 471	Physics of Nuclear Medicine I	3	MPH 486	Hyperthermia	1
MPH 503	Radiological Physics II	4	MPH 505	Radiation Physics Lab	3
MPH 531	Radiation Biology	3	MPH 542	Radiation Oncology	2
MPH 505	Radiation Physics Lab	2			<u>6</u>
		<u>12</u>			
Summer					
ANA 465	Gross Anatomy	5	Total		74
MPH 505	Radiation Physics Lab	3	Plus Electives		6
		<u>8</u>	Minium Required for Graduation		<u>80</u>

voluntarily withdrawing will be dismissed from the University.

Only grades of A, B and C fulfill degree requirements of required courses. Students will be considered in good standing at Rush University unless placed on academic probation.

Academic probation is assigned to a student who earns a quarterly GPA between 2.0 or 2.99 inclusive or whose cumulative grade point average falls below 3.0. Full-time students placed on probation must earn a cumulative GPA of 3.0 or greater at the end of the next consecutive quarter. Part-time students placed on probation must earn a cumulative GPA of 3.0 or greater by the end of the next two consecutive quarters.

A student who earns a quarterly grade point average below 2.0 will be dismissed from the University. A student who earns a grade of D or F in a required course must repeat the course. Failure to earn a grade of C or better in a repeated course will result in dismissal from the University. A student who earns a grade of D or F in two or more required courses will be dismissed from the University. In a repeated course, the new grade will replace the earlier D or F grade in the cumulative GPA.

Students placed on academic probation will be so notified by the department chairperson following a meeting of the Student Progress Review Committee. The letter will state the reasons for placing the student on academic probation and the specific requirements that

must be met by the student to reestablish good standing.

Full-time and Part-time Enrollment.

Although the faculty recommends full-time enrollment to maximize the opportunities available to students, part-time enrollment for all, or part, of the program may be arranged.

Graduation Requirements. The master of science with a major in medical physics program requires a cumulative grade point average of 3.0 or greater to graduate. All degree requirements must be completed within five calendar years from the beginning of the first quarter in which the student is enrolled in the program. The minimum number of quarter hours required for graduation is 80. Each student must develop and carry out a research project that culminates in the writing of a thesis or the completion of several practicum reports.

At the end of the first year, the student must take and pass a qualifying examination based on selected basic principles of physics and course work taken to date. The examination will include both written and oral components. Passing this examination qualifies the student to continue work toward the master's degree. A final examination in defense of the thesis and/or practicum reports will be given at the end of the second year. Failure to pass the final examination will require determination by the faculty whether the student will be granted a second and last opportunity. Upon such recommendation, a second examination may be scheduled at a mutually determined time within nine months of the initial examination.

Professional Certification

This program provides the basis for certification as a radiological physicist by the American Board of Radiology.

Educational Activities

In addition to providing educational and research experiences for students in the master's program, medical physics faculty members, most of whom hold joint faculty appointments in Rush Medical College, participate in the education of medical and other health professions students and residents.

Service Activities

Most faculty members are practitioner/teachers who provide patient care services through the facilities of Presbyterian-St. Luke's Hospital. Several faculty members also serve as medical physics consultants to a network of hospitals and health care centers in metropolitan Chicago.

Research Activities

Faculty members are active in theoretical and experimental research in medical physics and in its clinical applications. This research includes the study of basic mechanisms by which radiation transfers energy to biological and chemical materials; the development of new techniques for directing and measuring various radiations used in the detection, diagnosis, and treatment of cancer; the application of radioactive tracers to diagnosis and to the study of metabolic processes and the optimization of physical parameters for specific studies in diagnostic medical imaging including radiology, computerized radiography and tomography, radionuclide imaging, dosimetry in radiation protection, and radiobiology.

465 MWF 11-12
457 11-12 TTh
502 9-11 T, Th.
505
practicum

Department of Medical Technology

Philosophy

The contribution of medical technology to the patient and to the health care delivery system is primarily one of diagnostic services. The increasing number and wide range of diagnostic tests performed by medical technologists requires frequent adaptation to new laboratory methodologies and instrumentation. In turn, clinical medicine requires today's medical technologist to be a highly qualified professional who is willing and able to expand and extend his/her theoretical knowledge and technical skills. Today's professional technologist must develop technical expertise as well as teaching and administrative competence. The technologist must be able to adapt to rapid changes in the field while maintaining an optimal level of performance. As a member of the health care team, the medical technologist must have a basic understanding of the role of other health practitioners in order to function effectively and bring the best possible care to the individual and community. Although work in medical technology often does not place the practitioner in direct contact with the patient, the technologist must maintain compassion and empathy and accept the patient's welfare as the highest priority.

It is the aim of the baccalaureate program in medical technology to educate technologists to meet effectively the changing needs of laboratory medicine.

Admission Requirements

Students wishing to apply to the medical technology program may do so in one of two ways. Students may attend either an accredited college or university of their choice or one of the schools affiliated with Rush University that offers preparation for medical technology. All applicants must complete the preprofessional requirements. Applicants from institutions that have no affiliation with Rush should apply to the medical technology program by March for admission in the fall. Students at an affiliated school are recommended for admission to the Rush program by their health careers advisor at the affiliated school. Of the 16 schools affiliated with Rush University, the following offer preparation for medical technology:

Beloit College, Beloit, Wisconsin
Carleton College, Northfield, Minnesota
Colorado College, Colorado Springs, Colorado
Cornell College, Mt. Vernon, Iowa
Fisk University, Nashville, Tennessee
Grinnell College, Grinnell, Iowa
Illinois Institute of Technology, Chicago, Illinois
Knox College, Galesburg, Illinois
Lake Forest College, Lake Forest, Illinois
Lawrence University, Appleton, Wisconsin
Macalester College, St. Paul, Minnesota
Monmouth College, Monmouth, Illinois
North Central College, Naperville, Illinois
Ripon College, Ripon, Wisconsin
Wheaton College, Wheaton, Illinois

Curriculum

Preprofessional Program. The prehealth portion of the medical technology program is taken at an affiliated college or other accredited college or university and requires two or three years of study, depending upon the college. These years are devoted to preparing the scientific foundation upon which the practice of medical technology can be built. The first year emphasizes courses in biological, physical and behavioral sciences with options in the humanities. The succeeding prehealth years are used to increase depth in the sciences as they relate more specifically to health fields and to enhance personal experience by a broad choice of electives in the humanities.

Specific course offerings and requirements may vary from campus to campus due to curricular offerings, scheduling and course content. The listing suggests the kinds of courses that normally are required before a student comes to the Rush campus.

Professional Program. In the junior and senior years the student integrates the theory of clinical medicine with the practice of clinical laboratory procedures, learning basic theory and skills in hematology, clinical chemistry, immunology, and clinical microbiology in the junior year, going on to more advanced courses in those areas in the senior year. Senior students apply basic concepts as they rotate

Curriculum: Professional Program*

Fall Quarter	Junior Year	Quarter Hours	Fall Quarter	Senior Year	Quarter Hours
BCH 411 MTK 304 HEM 301	Clinical Biochemistry I Basic Laboratory Skills Hematology I	4 6 6 <hr/> 16	MTK 421 MTK 423 BCH 413 MTK 441	Practicum in Clinical Chemistry Practicum in Immunology Clinical Biochemistry III Seminar in Medical Technology	8 4 3 2 <hr/> 17
Winter			Winter		
MIC 311 BCH 412 MTK 303 IMM 301	Diagnostic Bacteriology Clinical Biochemistry II Body Fluid Analysis Basic Immunology	5 4 5 3 <hr/> 17	MTK 422 MTK 425 HEM 425 MTK 405	Practicum in Hematology Practicum in Immunohematology Hematology II Clinical Laboratory Information Systems	8 4 3 2 <hr/> 17
Spring			Spring		
MIC 411 IMM 403 IMM 431	Parasitology, Mycology, & Virology Clinical Serology Immunohematology	5 5 5 <hr/> 15	HSM 401 MTK 305 MTK 441 MTK 424	Health Care Management Patient Care Techniques Seminar in Medical Technology Practicum in Microbiology	3 2 1 8 <hr/> 14
	*Courses may not be offered in sequence listed but all are required courses			Total Required Hours Prehealth Hours Minimum Required for Graduation	96 90 <hr/> 186

through the laboratories of Presbyterian-St. Luke's Hospital and affiliated hospitals. In addition, students are prepared to fill supervisory and teaching positions through courses in management and education.

Academic Progression. The faculty reserves the right to request the withdrawal of any student whose conduct, health or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University.

High academic performance in required courses is expected. Undergraduate students will be considered in good standing at Rush University unless placed on academic probation.

Academic probation is assigned to any student who earns a quarterly grade point average (GPA) below 2.0 (A=4.0) or whose cumulative GPA falls below 2.0. Students placed

on probation have two quarters in which to regain the status of good standing. Failure to do so will result in dismissal from the University. Medical technology students may receive no more than one D in the following courses each year to remain in the program:

BCH 411, 412, 413
IMM 301, 402, 403, 431
MIC 311, 411
HEM 301, 425, 426
MTK 303, 304

An F grade in any of these courses will result in dismissal.

Work in all practicum courses must be at the C level or better. Any work in practicum courses below the level required for a C grade will result in an F grade. Courses in which an F grade is received may be repeated only once with the new grade replacing the F in the cumulative

GPA. A second grade of F in a practicum course will result in dismissal. Any student who needs to repeat a practicum course must do so within one year.

Academic Policies

(Additional policies are listed in the College of Health Sciences and in the Academic Information sections.)

Full-time Enrollment. The medical technology professional program requires full-time enrollment from September to June.

Certification. The comprehensive technical curriculum at Rush University prepares the student to enter the practice of medical technology. Graduates are eligible to take the National Certifying Examination given by the American Society of Clinical Pathologists, and, upon passing the examination, they become certified as medical technologists, MT(ASCP). Graduates are eligible to take any of the other national certifying examinations if they desire.

Graduation Requirements. The bachelor of science degree with a major in medical technology requires a minimum of 180 quarter hours. This includes at least 90 quarter hours earned before entrance as a lower division student at an affiliated school or as a transfer student. A minimum of 45 quarter hours of academic credit shall be earned as an upper division student in academic residence at Rush University.

Candidates for the bachelor of science degree must earn a 2.0 cumulative grade point average in all computed upper division credits taken at Rush University.

Participation in cap and gown at commencement exercises is expected of all graduates.

Educational Activities

The faculty of the department is responsible for providing both the didactic course work and the clinical experiences necessary for students to complete successfully all degree requirements for the bachelor of science with a major in medical technology. The department is accredited by the American Medical Association's Committee on Allied Health Education and Accreditation (CAHEA).

Research Activities

Faculty members of the Department of Medical Technology engage in either technical or educational research. Areas include biochemistry, education, hematology, hospital administration, immunohematology, immunology, and microbiology.

The Department of Medical Technology supports and is involved in the administration of the Research and Teaching Laboratory. The primary function of the laboratory is to provide research facilities and equipment in support of faculty and student research projects.

Service Activities

Faculty members are actively involved in the clinical laboratories of Rush-Presbyterian-St. Luke's Medical Center, maintaining active research, supervisory, and clinical positions in their specialty areas. Several faculty members hold conjoint appointments in Rush Medical College and teach the laboratory medicine courses for the medical college curriculum.

The Department of Medical Technology offers a continuing education program for the laboratory staff of Rush-Presbyterian-St. Luke's Medical Center, maintaining a record of the continuing education activities of all participants. Program faculty and resources span the continuum of clinical laboratory medicine and, therefore, actively support all areas where technical laboratory application is involved.

Department of Occupational Therapy

The Department of Occupational Therapy offers two graduate programs, each of which prepares the student for unique contributions to the field of occupational therapy. The professional program is designed for individuals with baccalaureate degrees in other fields who are seeking to become occupational therapists at the graduate level. The postprofessional program is designed for registered occupational therapists who are interested in advanced knowledge in the field. Students are not being accepted into the post professional program during the current academic year because the program is undergoing significant revisions of the structure and content of the curriculum.

Philosophy

The faculty of the graduate programs in occupational therapy emphasizes the educational approach that integrates occupational therapy and didactic material with clinical instruction and practice. The purpose of this educational philosophy is to allow the student maximum opportunity for the highest levels of integration of content and understanding of rationale for instruction. This philosophy is fostered through such concurrent sequencing of theory and clinically based experience that the student is able to relate to either or both environments depending upon which best facilitates the learning process. The early and continuous collaboration between the theoretical and the clinical learning environments allows for the development of a collegiality between faculty and students. Through such a relationship, the student's personal growth and opportunities for independent thinking are fostered. Since the program is concerned with the student as an individual, the relationship with faculty provides the student with a variety of individualized learning options and experiences within diversified work environments.

Professional Program

Educational Orientation. The professional graduate program at Rush University is designed for the student who has acquired a variety of life experiences through previous educational, vocational, and avocational activities. The program facilitates the incorporation of these life

experiences into the educational activities of the program. The educational philosophy utilized in the program which best addresses these spheres is based on theories of adult learning. By basing the program on adult learning theories, it is possible to build on the students' pasts, connect them to their present activities and predict a future of their competent, capable responses to the needs of the profession. The program is designed to enable the student to learn not only the content and theories of occupational therapy, but also the process of using the multiple resources of the learning environment, including teachers and peers. A series of carefully designed learning experiences, occurring within and outside the classroom, promote independence in conjunction with collegial interaction, problem solving and critical thinking, and analysis and synthesis of information. The graduate is a competent therapist who has maintained initial curiosity and has added increased ability for creative thinking. Because of experiences in self-directed learning and in self-identification of needs, the graduate is able to be responsible and responsive to the needs of the profession. The graduate is a potential learner in the field who is able to work in the traditional settings of occupational therapy, but, more importantly, the graduate is flexible, autonomous, and informed so as to adapt to the practice of the field in nontraditional settings.

Professional Orientation. Since the Rush graduate will be prepared to work in a variety of traditional and nontraditional settings, his/her practice base is the result of broad experiences within the many arenas of occupational therapy. The graduates have the ability to add increasing amounts of depth and validation to their treatment programs as a result of their involvement and experiences with problem solving approaches to therapy. Given the combination of breadth and depth of knowledge and experience related to occupational therapy treatment, the primary strength of Rush University graduates will be their ability and capability to function as highly resourceful clinicians. The role of the clinician is the core of all occupational therapy, as it was in the past and as it is projected for the future. The practitioner who is able to base treatment on established fact, internal and external resources, creativity,

Curriculum: Occupational Therapy, Professional Curriculum

Summer Quarter	Year I	Quarter Hours	Fall Quarter	Year II	Quarter Hours
ANA 465	Gross Anatomy	5	OCC 533	Principles and Methods of Supervision	3
HCE 525	Computer Application	3	OCC 545	O.T. Management in the Health Care System	3
		<hr/> 8	HSM 545	Organizational Analysis	2
			OCC 513	O.T. Interventions III	5
			OCC 518	Interventions III Fieldwork	1
			OCC 585	Research Proposal	3
					<hr/> 17
Fall			Winter		
OCC 501	Activity Theory and Skills	4	OCC 595	Advanced Fieldwork	1
OCC 461	Health and Development	3			<hr/> 1
OCC 463	Principles of Movement	3			
PSY 501	Intro. to Psychopathology	3			
		<hr/> 13			
Winter			Spring		
NEU 501	Introduction to Neuroscience	4	OCC 595	Advanced Fieldwork	1
OCC 502	O.T. History and Philosophy	3	OCC 598	Research Implementation (Thesis)	3
OCC 465	Group Dynamics	3			<hr/> 4
OCC 535	Issues & Perspectives in the Treatment of Children	3			
		<hr/> 13			
Spring			Summer		
OCC 506	Medical Conditions Seminar	3	OCC 514	O.T. Interventions IV	4
OCC 511	O.T. Interventions I	5	OCC 598	Research Implementation (Thesis)	3
OCC 516	Interventions I Fieldwork	1	OCC 590	Advanced Topics Seminar	2
OCC 541	Tests & Measurement in O.T.	4			<hr/> 9
OCC 510	Special Topics Seminar	3			
		<hr/> 16			
Summer					
OCC 512	O.T. Interventions II	5		Minimum Required for Graduation	96
OCC 517	Interventions II Fieldwork	1		(Elective courses are optional and may be taken at student's discretion)	
OCC 521	Etiology of Occupation	4			
OCC 531	Principles & Methods of Education	2			
HCE 581	Introduction to Research	3			
		<hr/> 15			

and problem-solving is the practitioner who will contribute to the credibility and viability of the profession. It is this type of practitioner who is expected to be the product of the Rush program. The graduates of the program are able to enter

the clinical arena competent and confident of their clinical skills but also able to expand upon those skills as individual situations require it. This continuous process of assessing a situation and expanding upon it contributes to the on-

Occupational Therapy - Part Time Schedule

Summer		First	Year	Fall	
ANA 465	Gross Anatomy	5	OCC 533	Activity Theory and Skills	4
HCE 525	Computer Application	3	OCC 461	Health and Development	3
		<u>8</u>			<u>7</u>
Winter		Spring			
NEU 501	Activity Theory and Skills	4	OCC 506	Medical Conditions Seminar	3
OCC 502	O.T. History and Philosophy	3	OCC 510	Special Topics Seminar	3
		<u>7</u>			<u>6</u>
Summer					
OCC 521	Etiology of Occupation	4			
OCC 531	Principles & Methods of Education	2			
		<u>6</u>			
Second Year					
Fall		Winter			
PSY 501	Intro. to Psychopathology	3	OCC 465	Group Dynamics	3
OCC 463	Principles of Movement	3	OCC 535	Issues & Perspectives in the Treatment of Children	3
		<u>6</u>			<u>6</u>
Spring		Summer			
OCC 511	O.T. Interventions I	5	OCC 512	O.T. Interventions II	5
OCC 516	Interventions I Fieldwork	1	OCC 517	Interventions II Fieldwork	1
OCC 541	Tests & Measurment in O.T.	4	HCE 581	Introduction to Research	3
		<u>10</u>			<u>9</u>
Third Year					
Fall		Winter			
OCC 533	Principles and Methods of Supervision	3	OCC 595	Advanced Fieldwork	1
OCC 545	O.T. Management in the Health Care System	3			<u>1</u>
HSM 545	Organizational Analysis	2			
OCC 513	O.T. Interventions III	5			
OCC 518	Interventions III	1			
OCC 585	FieldworkResearch Proposal	3			
		<u>17</u>			
Spring		Summer			
OCC 595	Advanced Fieldwork	1	OCC 514	O.T. Interventions IV	4
OCC 598	Research Implementation (Thesis)	3	OCC 598	Research Implementation (Thesis)	3
		<u>4</u>	OCC 590	Advanced Topics Seminar	2
					<u>9</u>

Ninety-six quarter hours required for graduation

going personal and professional growth which is vital to occupational therapy. The role of the clinician, as it is used in this context incorporates other major roles of the therapist. The involvement of the student in these other roles is another major strength of the program. The additional roles of educator, manager, and researcher cannot be separated from the practitioner role. As the Rush program is designed, the students have, in the context of their studies, the opportunity to explore the functions of the therapist as an educator, researcher and manager in terms of how they are employed by the practitioner.

Admission Requirements. The applicant to the professional program in occupational therapy must show evidence of the following in order to be considered for admission:

- a baccalaureate degree from an accredited college or university
- a recommended cumulative undergraduate grade point average (GPA) of 3.0 (A = 4.0)
- Graduate Record Examination results, achieved within the last five years
- three letters of reference
- a personal interview with members of the occupational therapy faculty or designated substitutes
- a statement of familiarity with occupational therapy in the form of observational, volunteer, or work experience
- prerequisite courses, as follows:
 - statistics
 - human growth and development (child through adult)
 - psychology (two courses)
 - introductory sociology or anthropology
 - human anatomy
 - human physiology

Postprofessional Program

The postprofessional curriculum is under revision. New students will not be admitted to that program until further notice.

Academic Progression

The faculty reserves the right to request the withdrawal of any student whose conduct, health or performance demonstrates lack of fitness for continuance in a health profession. Any such student not voluntarily withdrawing will be dismissed from the University.

Only grades of A, B or C may fulfill degree requirements in all required courses. Students will be considered in good standing at Rush University unless placed on academic probation.

Academic probation is assigned to a student who earns a quarterly GPA between 2.0 and 2.99, inclusive, or whose cumulative GPA falls below 3.0. Full-time students placed on probation must earn a cumulative grade point average of 3.0 or greater at the end of the next consecutive quarter. Part-time students placed on probation must earn a cumulative GPA of 3.0 or greater by the end of the next two consecutive quarters.

A student who earns a quarterly GPA below 2.0 will be dismissed from the University. A student who earns a grade of D or F in a required course must repeat the course. Only one required course may be repeated in the postprofessional program and two required courses may be repeated in the professional program. A required course may be repeated only once and the new grade will replace the earlier D or F grade. Failure to earn a grade of C or better in a repeated course could result in dismissal from the University. Only one D or F grade is allowed in a given academic year.

Students placed on academic probation will be so notified by the program director following a meeting of the faculty at which academic progress has been discussed. The letter will state the reasons for placing the student on academic probation and the specific requirements to be met by the student to reestablish good standing.

Any deviation from these policies must be approved by the Departmental Progress and Promotions Committee.

Academic Policies

(Additional policies are listed in the College of Health Sciences and in the Academic Information sections.)

Full-time and Part-time Enrollment.

Professional Program. The full-time academic program is a 27-month program covering nine academic quarters. A minimum of 95 credits is required for graduation. Instruction is provided by occupational therapy faculty and faculty members from other departments and colleges within the University.

Completion of all courses may take 39 months, on a part-time basis, but the final 12 months must be conducted on a full-time basis. All degree requirements must be completed within 42 months from the beginning of the first quarter in which the student is enrolled in the program. To be considered part time, a student must be enrolled for a minimum of three credits and fewer than 12 credits per quarter. A minimum of 96 credits is required for graduation.

Scheduling. Professional Program. Courses are scheduled daily, Monday through Friday, with occasional weekend classes.

Fieldwork/Practica. Professional Program. Preclinical experiences (i.e., part-time fieldwork) occur as part of each of the occupational therapy intervention courses. Because the University is part of an academic medical center, additional clinical experiences are arranged as a component of other courses when necessary.

Six months (two academic quarters) of full-time fieldwork is a requirement of the program. Fieldwork experiences are arranged by mutual agreement of students and faculty and occur at selected sites inside and outside of the Medical Center. Students may choose to extend the program by one quarter during which time they may have an additional fieldwork experience.

Accreditation and Certification. Professional Program. The Occupational Therapy Program is accredited by the Committee on Allied Health Education and Accreditation of the American Medical Association in conjunction with the Accreditation Committee of the American Occupational Therapy Association. Graduates will be able to sit for the national certification examination for the occupational therapist administered by the American Occupational Therapy Certification Board. After successful completion of this exam, the individual will be an Occupational Therapist, Registered (OTR). Many states require licensure in order to practice, however, state licenses are usually based on the results of the AOTCB Certification Exam.

Graduation Requirements. Professional Program. The master of science with a major in occupational therapy requires a cumulative grade point average of 3.0 or greater to graduate. All degree requirements must be completed within 42 months from the beginning of the first quarter in which the student is enrolled in the program. The minimum number of quarter hours required for graduation is 96.

Educational Activities

The Department of Occupational Therapy provides professional training for those seeking to become occupational therapists and for those who are experienced in the field and interested in advanced studies. The program prepares individuals to enter or return to the professional community to practice the skills of occupational

therapy, basing that practice on a full understanding of the foundations and principles of the field, and to engage in research and educational activities to enhance further the theory and practice of occupational therapy.

Faculty members within the Department of Occupational Therapy have teaching and supervisory responsibilities for the master of science degree programs in the College of Health Sciences. In addition, faculty members are involved in integrating the theoretical and clinical aspects of occupational therapy through the implementation of programs with diagnostic and development groups in the various occupational therapy units of the Medical Center.

Research Activities

Members of the department are increasingly involved in identifying research projects in occupational therapy. Faculty members are investigating extended applications of occupational therapy techniques with developmental and diagnostic groups for which there is minimal documentation. These investigations include developing screening instruments and corresponding assessment tools for pediatric, geriatric, psychiatric, and physical rehabilitation populations; investigating alternative methods of occupational therapy interventions with identified populations; and determining the validity, reliability, and applicability of both evaluation and treatment approaches. Research activity is also occurring in areas related to departmental productivity and interdepartmental relationships. Other faculty are involved in educational research arenas which includes the study of admissions processes; clinical supervision; clinical student performances; and educational needs of practicing therapists.

Service Activities

Members of the department provide a full range of assessment and therapeutic services for a variety of diagnostic and developmental populations. Occupational therapy services cover acute and chronic inpatient and outpatient psychiatry; pediatrics, including neonatology, developmental disorders, behavioral and emotional disorders, and learning disabilities; adult physical rehabilitation; geriatrics; and alcohol intervention programs. There are several subunits within each of these areas, and, within each unit, therapists use innovative occupational therapy interventions.

Department of Religion and Health

Educational Activities

The department provides humanistic and theological studies within the colleges, research in the area of religion and health, and an accredited program in clinical pastoral education (CPE) for pastoral personnel.

The Bishop Anderson Professorship has been established for teaching in religion and health. The Department of Religion and Health teaches primarily in the areas of thanatology, ethics, the relationship between religion and illness, and family dynamics. In addition, the department emphasizes the philosophy of medicine.

Accredited by the Association for Clinical Pastoral Education, the department offers basic, advanced, and supervisory education in pastoral care. This program is oriented to graduate theological students, pastors, members of religious orders or other health personnel who are interested and involved in pastoral care and counseling in the midst of a health crisis. Under faculty supervision, students carry direct responsibilities for ministry in patient care areas on an ecumenical basis, which includes a sensitivity to particular parochial practices. Students use clinical pastoral education in preparation for parish ministry, chaplaincy, teaching, pastoral counseling, or clinical pastoral education supervision.

Basic Clinical Pastoral Education. An intensive 11-week introduction to pastoral care, basic CPE focuses on models of ministry and their effect in patient care. Viewing the patient as a partner in learning, students engage in theological reflection, use pastoral resources with patients and health personnel and work toward a better understanding of the interaction between theology and behavioral sciences in interpreting the human condition. Students may be accepted for this course from any discipline or field of study. The course descriptions in religion and health found in the *Rush University Bulletin* are built on the experience of teaching the materials to theological students. However, there is no inherent difficulty in incorporating nontheological students into the course.

Advanced Clinical Pastoral Education. Advanced CPE is a year-long residency program for persons who have already completed their basic theological degrees, have had pastoral experience and want a pastoral care specialization, such as certification as a chaplain

through the College of Chaplains, American Protestant Hospital Association. Students function as pastoral members of interdisciplinary health teams to develop the capacity to utilize their pastoral perspectives and competencies through a variety of pastoral encounters.

Supervisory Clinical Pastoral Education. Supervisory CPE is designed for qualified persons who have demonstrated pastoral professional competence and who want to specialize in supervision in preparation for certification with the Association for Clinical Pastoral Education. Students are helped to develop both a theory and theology of pastoral practice; a philosophy of CPE includes understanding the theory and practice of appropriate education models and using versatility in supervisory skills and methods.

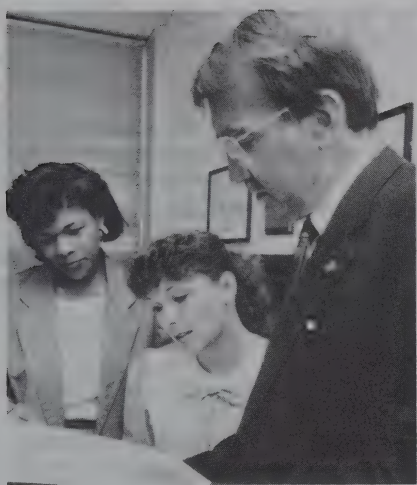
The program of religion and health is currently being developed to enlarge upon existing course offerings for interdisciplinary and clinical experiences within the various colleges of the University.

Service Activities

The Department of Religion and Health is responsible for providing pastoral care to patients, their families or supporting persons, and the staff personnel who serve them within Rush-Presbyterian-St. Luke's Medical Center. The department offers "round-the-clock" religious ministry to patients in the hospital, providing sacraments, church services, individual counseling and grief ministry to any person in need of them. It is available to support members of the student body and staff and to respond to emergencies when needed.

Research Activities

Until recently, the department had been functioning as a service and training department and had not been actively engaged in research. Research is now being incorporated into the training of CPE theological students. Areas being investigated include: attitudinal changes to life crises following educational process; faith systems and their effect on mobilization of physical resources; religious symbolism and patient/family support systems and acute grief behavior.



John E Trufant, Ed.D.
Dean, The Graduate College
Vice President, Academic Resources

"Great discoveries in health and medicine emanate from those who have the curiosity, the knowledge and the discipline to seek the truth. They must also have the wisdom to synthesize the meaning of their work and the skill to transmit it. Through collegiality in education and scientific investigation, The Graduate College faculty seeks to develop outstanding scholars who possess these critical characteristics."



THE GRADUATE COLLEGE

Mission

The primary mission of The Graduate College of Rush University is to promote and assure excellence in educational programs in selected disciplines of the medical sciences. The Graduate College promotes cooperative efforts in achieving high quality educational and research programs to prepare students for successful careers and lifelong professional development.

Philosophy

The Graduate College has been established to provide opportunities for students to work with selected members of the University faculty to earn graduate degrees with emphasis on the doctoral level in many of the sciences basic to health care. This limited goal, coupled with highly individualized programs, maximizes the students' opportunities for self-realization and the faculties' opportunities for sharing their scholarly development, expertise, and experiences on a personal basis. The organizational pattern allows a high degree of faculty and student participation in the educational affairs of the college. Each division's faculty members are active in basic medical research and education, providing opportunities for the advanced student to engage in a research program leading to the degree of doctor of philosophy.

The Graduate College faculty strives to provide individualized and flexible scholarly paths for its students. It avoids arbitrary imposition of uniformity and the encumbrance of unnecessary formality while simultaneously maintaining educational excellence. The faculty believes that such an environment permits independent thinking and high motivation for students' continued learning. Achievement of such a climate requires adaptation to the needs of students with the limitation in numbers of students implicit in such an approach.

Program

The Graduate College prepares students for the master of science and doctor of philosophy degrees. The doctor of philosophy is awarded in recognition of high achievement in a particular field of scientific research as evidenced by submission of a dissertation that demonstrates

the power of independent investigation and contributes to the body of existing knowledge. An undergraduate record of scholastic excellence is an important background for The Graduate College experience.

The Graduate College also provides excellent research and educational opportunities for advanced students who want to enroll concurrently in The Graduate College and Rush Medical College.

The process of application review includes a search for evidence of creativity and scholarly potential in the applicant. Nondegree students are not admitted with advanced degree objectives and are ineligible to become candidates for advanced degrees. Upon approval by a course director, any individual may audit a course.

In all cases, a student considering application for admission should first establish contact with the director of his/her choice of program to determine divisional requirements.

The student must meet all of the requirements for progress and graduation in the division's graduate studies program. In this regard individualized studies will be programmed to meet the student's need in achieving essential knowledge in preparation for these requirements.

Admission. The faculty of The Graduate College encourages diversity among the student population and, therefore, seeks to admit persons from various backgrounds. The Graduate College uses the following guidelines to evaluate candidates for admission. Individual divisions within the college may have additional requirements and criteria for admission. Applicants are encouraged to check with the division of interest first. The college's requirements are as follows:

1. All applicants must have earned at least a bachelor's degree or its equivalent.
2. A cumulative grade point average of 3.0 on a 4.0 scale, or equivalent, from the most recent degree is required.
3. All applicants are required to take the Graduate Record Examination (GRE) aptitude test and have their scores submitted. A combined score for the verbal, quantitative and analytical sections of 1,500 is desirable.
4. All applicants whose native language is not

English are required to take the TOEFL examination. A minimum score of 530 is required.

5. Each applicant is required to have three letters of recommendation submitted.

6. Specific admission requirements may be waived by the Graduate College Council. These will be addressed on a case by case basis.

Applicants who consider themselves to have special or unique qualities that make them strong candidates for graduate education are also encouraged to apply. Research and related job experience are valued highly in the admissions process and will be taken into account. Interviews with applicants are encouraged and can play a significant part in the admission decision. Beyond those measures, the faculty attempts to determine the applicant's motivation and potential for advanced study and a research career in the sciences. In many cases, an on-campus interview will be required.

Once the admissions office has received all required documents, including the application fee, it forwards the application to the division for review. If the division does not wish to offer admission to the applicant, the division makes that recommendation to the dean, who notifies the applicant of the decision. If an applicant meets all of the college and division admission criteria and the division agrees to admit the student, the admissions office is notified and the dean writes the applicant. If an applicant does not meet the college criteria as outlined above but the division wishes to admit the student, the applicant's admission materials are sent to the members of The Graduate College Council, where a review of the applicant takes place and an agreement to accept or reject is made following a presentation of the candidate to the Council by the division. The dean then notifies the applicant of the Council's decision, which is communicated in writing to the applicant by the dean.

Organization. The Graduate College is one of four colleges of Rush University. In order to carry out its educational mission, the college is organized into divisions; each division represents a separate discipline and each is related to its parent academic department. Currently, the college has the following seven divisions: anatomical sciences, biochemistry, immunology, medical physics, pharmacology, physiology, and psychology. Graduate study in microbiology, currently emphasizing virology, is offered within the division of immunology. One additional multidisciplinary division has been formed in cell

biology; however, no degree is offered in this field. The primary goal of each division is to provide excellent graduate education in the sciences basic to medicine. The divisions of The Graduate College are flexible and responsive to changing needs and experiences in their disciplines. To that end, the divisions are headed by directors who serve for definite terms of appointment and whose reappointments are subject to periodic review. Each division reports through its director to the dean of The Graduate College and is a member of The Graduate College Council.

The Graduate College Council is the senior representative body of the college. Its membership includes all division directors, three faculty members elected annually at-large from different divisions and two students elected by the students annually. The dean serves as the chairman of the council. The council is responsible for the admission of students; the formulation and adoption of general operating policies, standards and procedures of the college; the appointment of graduate college faculty and the approval of those recommended for degrees. Although the dean and council hold ultimate responsibility for programs of The Graduate College, the divisions of graduate study retain significant authority in structuring and administering their programs.

The faculty of The Graduate College is drawn from the faculty of the other colleges of Rush University. No faculty member has a primary appointment in The Graduate College. No ranks are associated with appointment to the faculty, and all faculty in The Graduate College are designated Members.

Doctor of Philosophy. The degree of doctor of philosophy (Ph.D.) is the highest earned degree conferred by Rush University. The Ph.D. is restricted to those scholars who have demonstrated superior ability in a recognized academic discipline.

While each graduate program has identified requirements, the Ph.D. is not awarded following the completion of any specific number of formal courses nor on the basis of miscellaneous course studies and research. The entire doctoral program must be integrated and highly research oriented. It must culminate in a work of literary and scholarly merit, which is indicative of the candidate's ability to conduct original research in a recognized specialty. Ph.D. programs are directed by selected faculty who work closely with graduate students. In practice, each program is composed of formal courses, guided individual study in a chosen field or discipline, study in such cognate subjects as may be

required by the candidate's advisory committee and original research that serves as the basis of a scholarly dissertation.

Thesis and Dissertation. A master's student must complete a thesis; a doctoral student must complete a dissertation. Both are developed through faculty-guided independent research projects.

Review of a thesis or dissertation will follow the sequence of steps described in the manual, *Preparation of Theses and Doctoral Dissertations*. Copies of this manual are available in each graduate division and in the Library of Rush University.

Academic Progression. Specific regulations governing the process that results in final awarding of the degree are developed by the graduate division responsible for the candidate's progress. While such regulations differ from one division to another, each division's program and regulations are reviewed and approved by The Graduate College Council. In all cases, graduate divisions are required to be explicit and clear about regulations that affect the candidate. This must be stringently observed in divisional regulations concerning selection of principal advisors, advisory committees and a plan of study. Similarly, divisions will be explicit and clear concerning academic policies and procedures surrounding qualifying, preliminary and final examinations when they are required. The divisions are also responsible for providing the student with the support needed to plan and conduct the thesis or dissertation research.

At the same time, a major responsibility of the student is to become familiar with the regulations and expectations of his/her division. These regulations and expectations are included in the *Rush University Bulletin* within the section devoted to each divisional program and within program publications. It is considered to be the student's responsibility to remain knowledgeable about these program regulations as they are set forth; they may change from time to time.

Some divisional programs may require the student to take one or more courses at a university other than Rush. It is the responsibility of the director of the graduate division concerned to make arrangements enabling satisfaction of such course requirements and to inform the student of such costs and special arrangements as may be necessary.

Admission to Candidacy. Admission to Candidacy is evidence that the doctoral student has successfully completed all required courses and has prepared to move into his/her intensive research experience. Admission to candidacy is

a demonstration of confidence that the student will successfully accomplish the remaining requirements of the program. At such time as the student is admitted to candidacy, upon notification from the student's division director, the registrar enters "Admitted to Candidacy" and the date on the official transcript.

Academic Policies

(Additional policies are listed in the Academic Information section.)

The Graduate College Council adopts college-wide policies and procedures and reviews division regulations. Students follow the college and division policies in effect at the time of initial matriculation in The Graduate College although the effect of major changes in policy will be negotiated by the student and division director. Students reentering the college after an absence will be guided by policies and procedures in effect at the time of reentry.

Transfer of Credit. Subject to the approval of the major advisor and the division director, graduate level courses taken at other institutions may be applied to graduate degree requirements at Rush if they are judged to meet divisional requirements. Grades from courses transferred from another institution are not recorded on the student's academic record; the number of credits is recorded and added to the cumulative number of credits.

Credit Hours. Rush University is on a quarter system. The quarter hour is the unit used by the College of Nursing, the College of Health Sciences and The Graduate College to determine credit for courses taken. As a general rule one quarter hour represents one lecture hour, two hours of small group discussion or three laboratory hours per week.

Each quarter is at least ten weeks in length. An examination period is provided at the end of each term, and in most classes a final examination is given during this time.

Examination Policy. The examination policy is the responsibility of the individual course director who will inform students of examination requirements for that particular course. A period at the end of the quarter is provided for examinations. This period may be used as the course director chooses.

Pass/No Pass Grades. Each division identifies all required courses for its students. No required course may be taken under the

pass/no pass option. With permission of the division director, electives may be taken for pass/no pass grades. The master's thesis and precandidacy research are graded P/N. The grading policy for postcandidacy research (699) for doctoral students is determined by each division.

Incomplete Grades. The grade of incomplete (I) is normally given only when circumstances beyond the control of the student prevent completion of course requirements and the student has received permission to defer completion of these unmet course requirements. The course director shall determine what work will be required to remove the incomplete and shall establish a specific time within which the student must complete such work, not to exceed one calendar year. No student may graduate with an incomplete grade on his/her academic record.

Upon completion of the unmet course requirements a new grade will replace the incomplete grade. A student who fails to remove the incomplete grade within the specified time period will receive a final grade of F.

Academic Standing.

Good Academic Standing. To remain in good academic standing, a student must maintain a cumulative grade point average of 3.0 and meet all requirements of his/her division. A student must be in good academic standing to be admitted to candidacy and to graduate.

Academic Difficulty. Each division has policies and procedures regarding students who fail to maintain good academic standing. While the responsibilities of informing students of their academic problems and of establishing conditions for regaining good academic standing reside with the divisions, The Graduate College Council monitors the progress and promotion of all students and gives final approval to award students' degrees.

Dismissal. Grounds for dismissal beyond minimal criteria established by The Graduate College are determined by each division. Should a division recommend the dismissal of a student, the director will forward such recommendation to The Graduate College Council for final action. Letters of dismissal come from the dean. Appeal of a dismissal action begins within the appropriate division.

Full-time Enrollment. Full-time enrollment is required of all graduate college students. Students must register for at least 12 but not more than 17 quarter hours per quarter. Students must obtain written permission for

exceptions to this policy from the division director.

Residency. Years of residence required by divisional programs are based on the definition that a student must be registered for a minimum of three subjects in each of three quarters to satisfy The Graduate College requirement of a resident year. The Graduate College minimum residency required of all graduate students is registration as a full-time student for eight quarters of at least 12 credit hours each. Unless granted a formal leave of absence, graduate students who fail to register for three or four quarters in each academic year, depending upon divisional requirements, are considered to have withdrawn from the University and must compete for readmission with other applicants.

Extension of Study. Maximum enrollment for degree completion is seven calendar years. Any approved leave of absence will be excluded from this time. A student may petition for an extension of the overall time limit to the division director. If such an extension is granted, the student will be expected to enroll full time for each remaining quarter in residence. If a student proposes to maintain active status in The Graduate College while at another location, approval by the division director and The Graduate College Council will be necessary. Such a student will enroll each quarter with the registrar of Rush University for zero hours of credit, and will be charged the enrollment fee at the rate in effect at the time.

Leave of Absence. A student who wishes to leave the University for a period of time may submit to the division director a written request specifying the circumstances and period of time involved. All decisions regarding the conditions of the leave and of reentry into the program will be communicated to the student by the division. No leave of absence shall exceed one calendar year (see Academic Information section).

Withdrawal from the University. Students withdrawing from the University voluntarily must complete a form available in the Office of the Registrar. The student will obtain necessary signatures and return all Medical Center materials and the identification card. Withdrawal is final once all Medical Center bills have been paid and the completed form is submitted to the Office of the Registrar (see Academic Information section).

Readmission. Any student who has withdrawn from the University or any dismissed student

may apply for readmission by submitting an application for this purpose to the admissions office. An interview may be required. A reentering student must meet the conditions for reenrollment stated in his/her dismissal or reentry acceptance letter and all policies,

requirements and course sequences in effect at the time of reentry. The student will pay tuition and fees at the rates in effect at the time of reenrollment. Application deadlines may vary by division.



Division of Anatomical Sciences

Philosophy

The Division of Anatomical Sciences offers programs of study at the master's and doctoral levels to prepare students for roles in teaching and research. A pedagogic component provides experience in gross anatomy, histology, and neuroanatomy sufficient for the student to be a confident participant in teaching, in the organization of courses, and in conferences in the medical setting. Advanced course work is available in cytology, embryology and developmental biology, regeneration, and the anatomy of joints. It is the goal of thesis and dissertation research to foster the student's conceptual growth as well as independence and resourcefulness in application of anatomical methods to the broader scope of a biomedical problem.

Admission Requirements

The Division of Anatomical Sciences seeks students who demonstrate in their previous educational experience motivation toward teaching and research as well as a capacity for independent study. The tutorial nature of graduate study in the Department of Anatomy requires that consideration be given to potential for the expansion of the student's area of interest with respect to the expertise and resources of individual faculty.

Applications are invited from students who have been awarded the baccalaureate degree; students who have satisfactorily completed other graduate work, or superior medical or other professional students at Rush who wish to pursue concurrent graduate study.

An undergraduate record with performance of at least a 3.0 (A=4.0) or equivalent level in the major field of study is required. The major, preferably in biology or chemistry, should include laboratory experience; courses in comparative anatomy and embryology are recommended. The Graduate Record Examination (GRE) is recommended in conjunction with either the biology or chemistry subtests.

Personal interviews are required of applicants whose credentials demonstrate acceptable academic and test performance. The purpose of this interview is to provide the applicant with a

better idea of departmental activities, and to assess his/her basic areas of interest.

Specific admission requirements may be waived at the discretion of the Graduate Advisory Committee in anatomy. Advanced placement credits, also subject to approval, are limited to a maximum of one academic year. Since the course cycle begins in the fall quarter, applicants are ordinarily expected to complete their files by May 1 preceding the intended date of admission.

Curriculum--Ph.D. Program

The first- and second-year curricula are devoted to anatomy course work and to complementary electives selected from cell biology, physiology, biochemistry, pharmacology, and immunology. Pedagogic experience in anatomy is provided through teaching assistantships during the second year.

An independent study during the second quarter of the first year is intended to help the student outline a preliminary project to be conducted in the summer following the first year. This project allows the student to apply anatomical methods to experimental objectives established in collaboration with a supervising faculty member. The project is intended to help the student develop lines of interest for additional elective course work and dissertation study.

Preliminary Examination. After completing the course requirements, the student must take the preliminary examination in order to qualify for degree candidacy. This examination emphasizes the student's ability to synthesize material, to solve problems and to communicate verbally and in writing. The first part of this examination consists of a written, comprehensive examination based on course material. The second part, an oral examination, is based on the student's dissertation proposal.

Dissertation Research. Upon completion of both parts of the preliminary examination, the candidate devotes his/her time entirely to dissertation research and writing. The dissertation must be based on an original experimental or applied study; its format and review must comply with requirements of The Graduate College. The candidate must finally defend the completed dissertation before his/her research committee.

Course Requirements. The program requires a minimum of 140 quarter hours of credit. The Division of Anatomical Sciences maintains a minimum residency requirement of eight quarters of full-time registration in The Graduate College. This residency requirement also applies to students who have received advanced standing.

Three advanced topics in anatomy (8-12 quarter hours total) are required. These are delivered as seminars, tutorials or, in some instances, as laboratory instruction. Courses offered by the Division of Cell Biology (CEL 501, CEL 522 and CEL 571) are recommended so

that four hours from this course series may be applied to the major advanced topic requirement.

The balance of elective hours are subject to approval by the Division of Anatomical Sciences. Two minor electives must be taken outside of the division. (See listing of requirements on the next page.)

Journal Club. Participation in the departmental journal club is expected each quarter. This club exposes students to current topics in anatomical research and provides opportunities to discuss problems with established investigators.

Suggested Curriculum: Anatomical Sciences

Fall Quarter		Year I	Doctoral Quarter Hours	Masters Quarter Hours
ANA 451	Histology		5	5
ANA 471	Human Anatomy I		7	7
ANA 501	Supplement to Histology		1	2
ANA 503	Supplement to Human Anatomy I		1	1
ANA 595	Journal Club		1	1
Winter Quarter				
ANA 472	Human Anatomy II		7	7
ANA 504	Supplement to Human Anatomy II		1	1
ANA 581	Approaches & Methods in Morpho- logical Research		2	2
ANA 595	Journal Club		1	1
	Elective		5	2
Spring Quarter				
NEU 451	Neurobiology		5	5
CEL 501	Cell Biology or Equivalent Course		2	2
ANA 505	Embryology		2	2
ANA 581	Approaches & Methods in Morpho- logical Research		2	2
ANA 595	Journal Club		1	1
	Elective		2	2
Summer Quarter				
ANA 595	Journal Club		1	1
	Research (Proposal Development)		13	13
Year II				
ANA 591	Teaching Assistantships		9	3
ANA 595	Journal Club		3	3
	Electives		14	2
followed by Written Comprehensive Examination and Thesis Proposal				

Master's Program

A master of science degree with a major in anatomical sciences is offered for individuals seeking advanced study without the full commitment to doctoral study. This is primarily a concurrent degree program for Rush medical students although outside applicants will be considered. Flexibility of this program permits students to pursue cross-disciplinary research in other departments where a structural biology problem is involved.

The program consists of six quarters of study and requires a research thesis. On the recommendation of the program director, a student may petition for admission to the doctoral program.

Degree Requirements	Doctoral Program	Masters Program
Core Anatomy Courses	32	22
Electives	21	11
Teaching Assistantship	9	3
Journal Club	6	6
	<hr/> 68	<hr/> 42
Research	72	13
	<hr/>	<hr/>
TOTAL HOURS	140	55

M.D./M.S. or M.D./Ph.D. Program

The exceptional student with a research or academic orientation may wish to pursue concurrent graduate study. Coordination of graduate with medical studies is especially feasible in the Division of Anatomical Sciences since introductory course work can be satisfied within the medical curriculum.

Although master's degree requirements can be completed within the four year medical curriculum, the Ph.D. requires an additional commitment of at least two years. Arrangements with the medical school can be adapted to suit individual needs.

Academic Policies

(Additional policies are listed in The Graduate College and in the Academic Information sections.)

Assessment of Progress. The student's progress will be assessed continuously based upon performance in the courses taken and upon evaluations by the Graduate Advisory Committee in anatomy.

Good academic standing requires maintenance of a cumulative grade point average of 3.0, with the expectation that students earn B grades in the major anatomy courses. An outline of specific policies relevant to the preliminary examination and dissertation defense may be obtained from the program director.

Guidance. Each entering student is guided in his/her course of study by the program director, with the assistance of the Graduate Advisory Committee, until the student determines a course of dissertation scholarship and selects a research advisor.

The research advisor, who must hold an appointment in the Division of Anatomical Sciences, ensures that the student's graduate course work satisfies requirements of the division and The Graduate College; assists the student both in the development of a dissertation proposal and in dissertation research and obtains necessary laboratory and funding resources to complete the student's study.

Research Activities

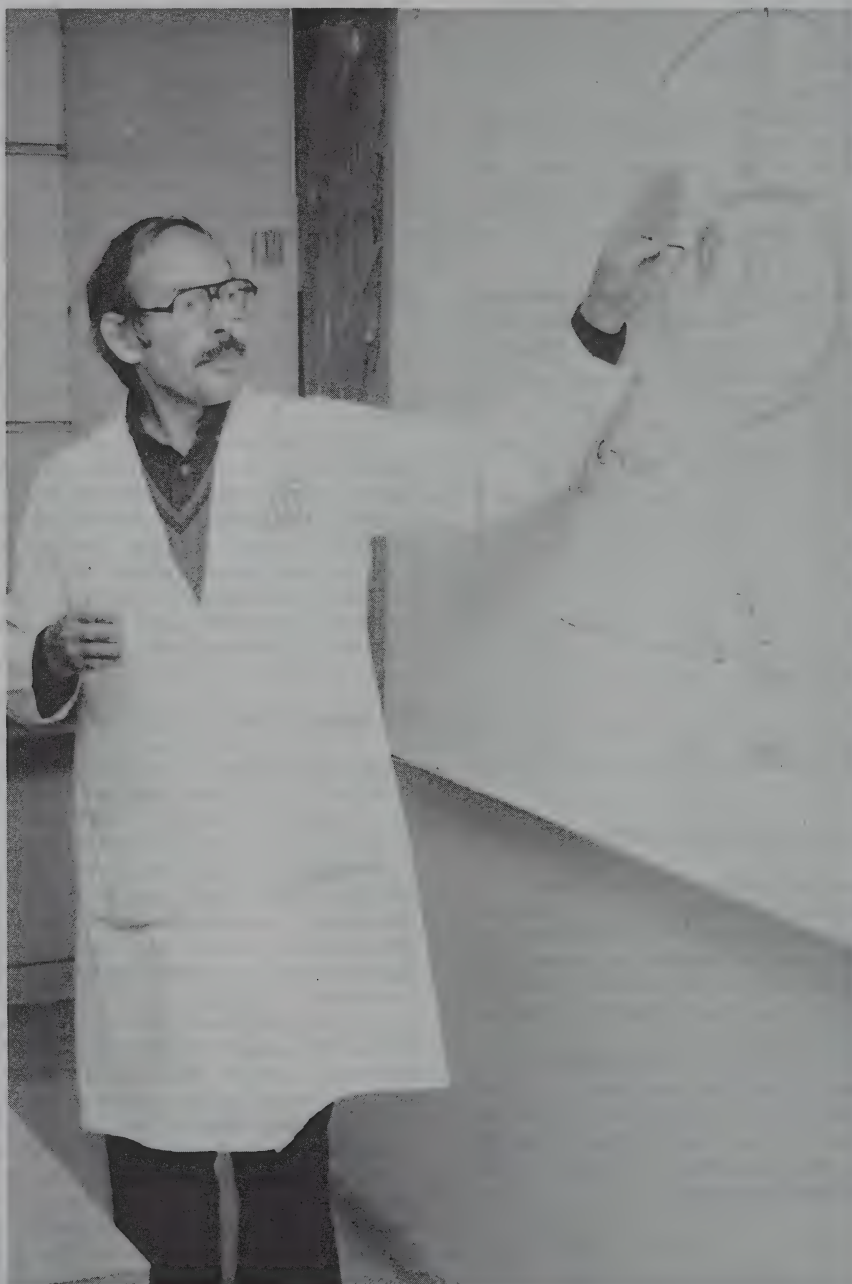
Modern research and teaching areas in the Academic Facility have been designed specifically to meet the needs of both basic medical science education and research with accessibility to scanning and transmission electron microscopes and a bioinstrumentation laboratory. Individual faculty are available to discuss their research interests with prospective applicants and to provide information on current activities.

The opportunity exists for students to establish cross-disciplinary programs with affiliated clinical departments, such as the Department of Ophthalmology or the Department of Orthopedic Surgery, which has one of the major gait laboratories in the country.

Research in neurobiology is focused on cellular responses to nerve injury and repair (Kerns, Jacob, Durica). Mechanisms of pattern formation and histogenesis are being studied in regeneration of amphibian limbs (Dinsmore). Damage produced by inflammation and by

microvascular pathology is being studied in relation to the pathology of eye disease (Hughes). Structural and physiologic studies on the lens are directed to the function of membrane specializations in cell communication (Kuzak). The organization of the red cell membrane is being studied in relation to

pathological deformations and the cytoskeletal components of the erythrocyte (Khodadad). The pathophysiology of the synovial joint and articular cartilage is being studied in experimental models (Williams, Cole). Biomechanical studies on locomotion in health and disease are conducted in the gait laboratory (Andriacchi, Sumner).



Division of Biochemistry

Philosophy

The department has defined its goals in regard to its graduate program on the basis of the expertise of its faculty members. They may be stated as follows:

to provide high quality education, practical training, and research opportunities to students who are interested in practicing biochemistry in one of the following three areas: basic and applied research in molecular-medical biochemistry; research in the biochemistry of cell function and clinical biochemistry--both in the service laboratory and in investigating the factors involved in the etiology of disease.

In other words, the goal is to develop health care professionals who will substantially improve health care delivery to the public.

Research strengths and other expertise of the department lie in certain well-defined areas, such as mammalian tissue culture methodology, basic research in connective tissue, metalloelement biochemistry, and clinical biochemistry. "Medical biochemistry" is perhaps the most fitting single term that can describe the department's scholarly direction. The tissue culture or cell biochemist attempts to explain how cells interact with their environments and with each other and what causes changes in a cell's physiology, thus making it malignant or aberrant in another way. The classical biochemist, on the other hand, is concerned with fundamental biochemical processes on the molecular level, such as the mechanism of collagen biosynthesis and degradation. It is the classical biochemist's discoveries that are often applied by the clinical biochemist and the cellular biologist to advance their own fields of endeavor.

Clinical biochemists are frequently entrusted with the management and operation of laboratories in a hospital, university, medical school or a medical institute and, in that capacity, have the opportunity to interact with other health care professionals such as physicians and nurses. The clinical biochemist, through his/her research activities, furthers the understanding of the disease process in the human being.

Admission Requirements

Admission requirements include the following:

- a bachelor's degree in any scientific area. Specific course requirements are as follows: chemistry--one year each of general chemistry and organic chemistry plus one course in quantitative analysis; biology--one year of general biology plus one year of intermediate or advanced undergraduate biology; mathematics through calculus, and one year of physics. A semester of physical chemistry is recommended but not required. Students may be accepted with less than the above minimum requirements with the understanding that such deficiencies are to be made up during the first year of graduate study and that such make-up work may prolong their residency at Rush.
- Graduate Record Examination (GRE) aptitude test. There is no minimum score required. However, among equally qualified applicants, those with higher GRE scores will receive preference.
- letters of recommendation. Three letters are required from persons qualified to judge a student's potential as a scientist. The referee, whose comments will be taken most seriously by the Graduate Program Committee of the department, will have had extensive contact with the student as a teacher of science or a supervisor in a science-related work situation.

Students are normally admitted in the fall quarter, but the Graduate Program Committee may, at its discretion, recommend admission for the winter, spring or summer quarter.

Curriculum

Introduction. To meet better the objectives delineated above, the curriculum has been formally divided into three tracks: molecular-medical, supramolecular, and clinical biochemistry. The admission requirements are identical for all three tracks, and the first-year and a part of the second-year course sequence are identical for all students (see chart).

Following this period, during which the students take their basic biochemistry theory and

Suggested Programs Satisfying Minimum Requirements for the Doctorate in Biochemistry

Year of Study	<u>Molecular-Medical Biochemistry</u>			<u>Clinical Biochemistry</u>			<u>Supramolecular Biochemistry</u>		
	F	W	S	F	W	S	F	W	S
1	BCH 501 (6) PHY 451 (5) BCH 595 (1) BCH 699 (1)	BCH 502 (6) PHY 452 (5) CEL 501 (2) BCH 595 (1)	BCH 502(5) BCH 581 (4) BCH 595 (1) BCH 699 (2)	Identical to Molecular-Medical Biochemistry Track			Identical to Molecular-Medical Biochemistry Track		
2	IMM 501 (5) PHR 501 (5) BCH 590 (3) BCH 699 (1)	Elective (4-5) BCH 590 (3) BCH 595 (1) BCH 595 (1)	Elective (4-5) BCH 590 (3) BCH 595 (1) BCH 699 (2)	BCH 611 (3) IMM 501 (5) PHR 501 (5) BCH 595 (1)	BCH612 (3) BCH614 (3) BCH 595 (1) BCH 699 (5)	BCH 613 (3) BCH 615 (3) BCH 595 (1) BCH 590 (3) BCH 699 (2)	BCH 621 (3) IMM 501 (5) PHR 501 (5) BCH 595 (1)	BCH622 (3) BCH624 (3) BCH 595 (1) BCH 699 (5)	BCH 623 (3) BCH 625 (3) BCH 595 (1) BCH 590 (3) BCH 699 (2)
				Preliminary Examination					
3	BCH 590 (3) BCH 699 (9)	BCH 590 (3) BCH 699 (9)	BCH 590 (3) BCH 699 (9)	BCH 590 (3) BCH 699 (9)	BCH 590 (3) BCH 699 (9)	Elective (3) BCH 699 (9)	BCH 590 (3) BCH 699 (9)	BCH 590 (3) BCH 699 (9)	Elective (3) BCH 699 (9)
4	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)	BCH 699 (12)
	Students may register for elective didactic courses beyond those required at any time after consultation with their advisers and track coordinators			Credit hours for BCH 599 would be correspondingly lower when these electives are taken.			Electives that are strongly recommended are in the areas of microbiology-virology, statistics, data processing, and radioisotope techniques.		

In summer quarters students normally register for 12 quarter hours of BCH 699, although didactic courses such as BCH 590 might also be offered occasionally.

laboratory techniques, immunology, cell biology, pharmacology, and physiology, the students become involved in formal instruction in their specializations. These are finished by the end of the second year of graduate study. During the summer following the second year of residence, the student normally takes the preliminary examination, which is designed to test the fundamental knowledge developed during the first two years in graduate school. If the examination is passed, the student proceeds to concentrate on his/her research, although taking further formal electives in the student's area of interest is strongly encouraged. The dissertation sequence involves the presentation of a proposal to the dissertation research committee and dissertation examination by the dissertation examination committee.

Required Didactic Courses. Any portion of this may be waived on a case-by-case basis by the Graduate Program Committee.

All biochemistry tracks (molecular-medical, supramolecular, and clinical biochemistry):

BCH 501, 502, 503	17 quarter hrs.
PHY 451, 452	10 quarter hrs.
CEL 501	2 quarter hrs.
PHR 501	5 quarter hrs.
IMM 501	5 quarter hrs.

BCH 581	4 quarter hrs.
BCH 595	6 quarter hrs.
TOTAL	49 quarter hrs.

Additional requirements:

<u>Molecular-Medical Biochemistry Track Only</u>	
BCH 590	18 quarter hrs.
Electives	8 quarter hrs.
<u>Clinical Biochemistry Track Only</u>	
BCH 611, 612, 613	9 quarter hrs.
BCH 614, 615	6 quarter hrs.
BCH 590	9 quarter hrs.
<u>Supramolecular Biochemistry Track Only</u>	
BCH 621, 622, 623	9 quarter hrs.
BCH 624, 625	6 quarter hrs.
BCH 590	9 quarter hrs.

Minicourses The department offers, from time to time, short intensive courses in specialized areas of biochemistry presented by visiting or local faculty members. Students register for one hour credit and spend ten hours in the classroom.

Academic Policies

(Additional policies are listed in The Graduate College and in the Academic Information sections.)

Admission and Initial Progress. Upon being admitted to the program, the student follows the prescribed course work during the first year. As soon as possible after matriculation, the student decides which track he/she will follow and selects a principal advisor. If during the first two years a mutually agreeable advisor cannot be found, the student must leave the program. At any time during the first year, the student may begin his/her research program with the advice of his/her advisor.

Preliminary Examination. This examination is given to students normally after a two-year period in the program. If this examination is passed, the student formally presents his/her project to his/her dissertation research committee. The preliminary examination, designed to test the student in the fundamentals of biochemistry and related basic medical sciences pursued in the first two years of the program, consists of written and oral portions. The student's advisor, with the consent of the track coordinators, recommends to the Graduate Program Committee that the student is ready to take the examination. The latter appoints the membership of an examining committee of six professors, with the student's advisor as chairman and at least two members of the committee who are from outside the department. The examining committee, when approved by the chairman of the department, constructs and administers the written portion of the preliminary examination to the student and follows this with an oral examination. The results of the written and oral examinations, taken as a whole, determine if a student has passed the preliminary examination. The chairman of the examining committee informs the Graduate Program Committee of the result. If the student has not passed, a report by the examining committee, signed by all members thereof, describes the committee's recommendations (e.g., the student should not be allowed to continue in the doctoral program, the student should be given another opportunity to retake the preliminary examination after appropriate remedial work, or another course of action deemed appropriate in a particular case). The Graduate Program Committee transmits the examining committee's recommendation with or without its own comments to the chairman of the department for approval.

Dissertation and Dissertation Examination.

After the student passes the preliminary examination, the Graduate Program Committee, with the approval of the chairman of the department, appoints a dissertation research committee consisting of the student's advisor, the two track coordinators and two professors, one of whom must be from another department, to guide the student's research progress. The student submits to the dissertation research committee a research proposal specifying his/her research objectives, methodology to be used, and significance of the project. If the proposal is approved, the approval is transmitted to the Graduate Program Committee. If not, the student and his/her advisor are asked to revise the proposal.

When the research project has achieved the desired objective as judged by the student's dissertation research committee, the student compiles the first draft of his/her dissertation. This is conveyed to the Graduate Program Committee. If the quality of the work is deemed adequate, the Graduate Program Committee, with the approval of the chairman of the department, appoints a dissertation examination committee for the student. It is anticipated that the dissertation research committee with one or two additions will also function as the dissertation examination committee. The dissertation examination committee guides the student in preparing the final form of his/her dissertation and administers an oral examination, where the student is required to defend his/her work. At the discretion of the dissertation examination committee, the student may be requested to present a seminar in lieu of the defense examination. The dissertation examination committee reports its decision (pass or no pass) to The Graduate College Council which recommends that the student graduate if the defense is successful. In case of a no pass, the chairman of the dissertation examination committee is to prepare a report with a recommendation for further action.

Quarter Hours Required. A full-time graduate student is registered for 12 or more hours of credit each quarter. A total of 146 quarter hours with approximately 12 hours per quarter in residence is required for graduation. The Graduate Program Committee may, at its discretion, recommend a waiver to The Graduate College Council of any portion of this requirement for students with previous graduate work at Rush or elsewhere.

Grade Requirements. Students must maintain a GPA of 3.0 in order to remain in the

program, to be admitted to the preliminary examination and to graduate. Electives, required non-departmental courses, seminars, and research courses may be graded pass/no pass. All departmental courses must be taken for a letter grade. At the end of each academic year, the student's academic progress is reviewed by the Graduate Program Committee. If the GPA is below 3.0 or if a student has an unresolved failure(s) in a required non-departmental course, the committee may put the student on probation by giving the student an opportunity to correct the deficiencies within two succeeding quarters and, if the student does not correct the deficiencies within that time, dismissal shall be mandatory. Alternately, the committee may recommend the student's dismissal from the program. A student receiving a failing grade in a nonrequired elective is reviewed by the Graduate Program Committee to decide how the failure is to be rectified.

Time Limit. For the completion of the doctoral program no more than seven years shall be required though quarter by quarter extensions may be granted via petition to the Graduate Program Committee.

Research Activities

The faculty of the Department of Biochemistry is currently involved in several areas of investigation. Some of these research programs are joint efforts with other departments, giving the student an opportunity to interact with researchers of other disciplines as well as clinicians. Major research areas are the following:

- connective tissue biochemistry focusing on the structure and function of the various molecular components such as proteoglycans and collagen
- iron metabolism in mammalian as well as microbial systems
- cancer biochemistry, paying particular attention to the control of tissue invasion by tumors, and the mechanisms of tumor induction in the prostate and breast
- the biochemistry of the fibrinolytic system studying the plasminogen activators from tissues
- endothelial cell physiology, including the interaction between platelets and the cellular and molecular elements of the blood vessel,

the involvement of prostaglandins in the thrombotic process and cardiovascular disease and the regulation of endothelial cell proliferation

- studies on the structure and synthesis of the red blood cell membrane lipids
- neurochemistry concentrating on the role of various drugs in combating cerebrovascular disorders
- application of biochemistry to medical problems

Industrial Experience

Selected students will have an opportunity to spend a quarter in a basic science research laboratory of a participating pharmaceutical company or another recognized institution for research or higher learning in the United States or Europe. The students will be selected for such experience through guidelines established by the department.

During his/her tenure in the outside laboratory or institution, the student will register for BCH 585 (5 hours) and BCH 699 (7 hours).

Service and Clinical Activities

The department has several faculty members who are involved in the operation of hospital clinical biochemistry laboratories and who perform basic and development research in the area of clinical biochemistry. Such laboratories are available for student training and, on a limited scale, student employment. Clinical biochemistry track students will receive a major portion of their training in the various clinical biochemistry laboratories now served by the department's faculty members.

Concurrent M.D./Ph.D. Program

A student may apply for admission to the concurrent M.D./Ph.D. program in biochemistry either at the time of medical college application or later, after admission, while enrolled in the medical college. No student will be admitted to the graduate program before being admitted to the medical college.

The program is tailored to an individual student's needs. Normally the student first takes the required preclinical courses at Rush Medical College and passes the National Board of Medical Examiners (NBME) Part I Examination. The student may then begin work in the graduate program, which would normally last for two to three years. Following the completion of graduate work, the student resumes medical studies in the clinical clerkships. Alternatively,

the medical student may complete the medical school requirements for graduation before starting work toward the Ph.D. degree.

The participant in the concurrent M.D./Ph.D. program will be expected to fulfill the same divisional requirements as the Ph.D. student: formal course requirements at the appropriate grade level, passing of the preliminary examination, and the submission of a high quality dissertation based on original research work.

Many formal course requirements for the Ph.D. degree will be met by taking the prescribed Rush Medical College courses (e.g., biochemistry, pharmacology, physiology, immunology, and electives); however, these

courses will be evaluated by letter grade rather than on the honors, pass, fail system.

The manner in which the student will meet any additional formal course requirements as specified by the Graduate Program Committee will be determined on an individual basis. It is expected that all course requirements will be met by the M.D./Ph.D. program participant during the first year in the graduate program and that the preliminary examination will be taken at the end of the first year. The remainder of the student's time is to be spent in research activities. The overall M.D./Ph.D. program would normally require six to seven years to complete.



Division of Cell Biology

The Program

Generally, cell biology explores the structural organization and functional integration within cells. As a field of study, its knowledge and techniques extend to all the specialized fields of the health sciences. The purpose of the Division of Cell Biology is to supplement understanding of such basic knowledge and techniques for students in the health sciences. The division encourages integration of the resources of people and facilities throughout Rush University to produce a comprehensive study of the cell. Such a purpose must be multidisciplinary, for cell biology spans many departments within the University, including anatomy, biochemistry, immunology, microbiology, pathology, pharmacology, and physiology.

Historically, the electron microscope has had a major impact on the growth of cell biology. The teaching of the division is centered on the electron microscopy laboratory of The Graduate College. Students will study the ultrastructure of

the cell and its organelles in electron micrographs. But it is most important that they learn about the function of the organelles in a multidisciplinary fashion. Thus, the supra-molecular structure and molecular organization of the cell constituents are emphasized. Advanced students will learn the technical skills necessary for pursuit of research projects involving cell and molecular biological techniques. Teaching is organized with courses in cell biology and electron microscopy. Students taking such courses may use them as credits toward their Ph.D. requirements in other graduate divisions of Rush University, subject only to the regulations of those divisions.

Courses

The courses are available to graduate students within the graduate, medical, nursing (i.e., graduate nurses) and health sciences colleges, subject to demand and limitation.



Division of Immunology

Philosophy

The goal of this program is to train investigators who will contribute to the advancement in understanding immunological and microbiological mechanisms in health and disease.

Admission Requirements

Students who have received the baccalaureate, master's or doctoral degree may apply. It is recommended that students wishing to enter the immunology program should have achieved a high level of competence in biology, mathematics, and chemistry. It is important that applicants be adequately prepared to engage directly in graduate study and research.

Candidates usually enter the program in the fall quarter; applications should be submitted as early as possible and no later than April 1. Applications will be evaluated as they are received.

Applicants for admission to the program will be evaluated initially by the departmental admissions committee and then the departmental faculty. Final approval for admission will be made by The Graduate College Council. Considerations for admission will include overall academic record, the recommendations of the sponsors, results of a recent Graduate Record Examination or its equivalent, and the description of the applicant's aspirations and interests. Personal interviews will be arranged for potential candidates after the preliminary screening. Students will be admitted into the program at levels other than first year only under exceptional circumstances; this will require approval by the faculty of the Division of Immunology and by The Graduate College Council.

Curriculum Requirements

A core program of courses encompassing major aspects of immunology and microbiology given concurrently with laboratory tutorials and predissertation research comprises the first two years.

Courses in basic immunology and microbiology, biochemistry, molecular genetics, cellular immunology, virology, the biology of membranes, and molecular immunology are required. Additional advanced courses may be

selected from the following: immediate hypersensitivity, inflammation, clinical immunology, clinical microbiology, and host defense.

Academic Policies

(Additional policies are listed in The Graduate College and in the Academic Information sections.)

General Information. A minimum of three years of full-time study (four quarters per year) and research, or the equivalent in part time, is required to satisfy the residency requirements of this program.

Upon admission each student will be assigned by the program director to an individual tutor who will be responsible for guiding the student's academic activities during the first 12 months when the selection of a principal advisor for dissertation research should be made. Alternatively, some students may enter the program with a principle advisor selection already made. During the first 12 to 24 months the student will carry an academic program designed for his/her own requirements through frequent discussion with his/her tutor and principal advisor and with the Graduate Advisory Committee. This program should provide the student with a thorough grounding in immunology, microbiology, and appropriate related basic sciences and practical experience in several laboratories of the division faculty. Following the demonstration of competency, encompassed by the core curriculum and other elective courses, and acceptance of the dissertation proposal, students will essentially devote themselves full time, with participation in general departmental activities, to their dissertation research. The research program will be carried out under the guidance of a designated principal advisor and a dissertation committee. Following agreement by the student, advisor and dissertation committee that a suitable stage in the research program has been reached, the student will prepare and present a dissertation demonstrating the ability to carry out a research program and make original contributions to the area of investigation.

All students must meet the basic requirements of The Graduate College. Passage of the preliminary examination as partial fulfillment for entrance into candidacy for the Ph.D. degree is

dependent upon demonstrated competence in scientific areas related to the field of immunology or microbiology. This can be achieved by participating in the recommended core program of lecture and tutorial courses of both a basic and advanced nature which may be supplemented by independent study. Other requirements, as specified by the student's dissertation advisory committee, may be met by completion of lecture, tutorial or laboratory courses in this and in other divisions of The Graduate College.

Courses in cell biology, pharmacology, histology, pathology, and statistics are considered relevant to training in immunology; these are available as part of the student's academic program but are not considered essential for all students. It is possible that courses in some subjects considered essential for a particular student's academic program will not be available in The Graduate College. Such requirements may be met either by special arrangement with the faculty of other institutions or by enrolling in such courses available at other institutions within the geographical area. Faculty assistance in the identification of these courses and supporting tutorial instruction will be arranged. Involvement also is required in the immunology/microbiology department research conferences and journal clubs.

Assessment of Progress. The academic progress of each student is continuously assessed by each faculty member with whom the student has worked. The use of conventional examinations is encouraged but is not required, and instructors are free to use whichever system of assessment they wish to apply, provided their criteria are made explicit.

To be in good academic standing, a student must maintain a cumulative grade point average of 3.0 (A=4.0) or better. A student whose cumulative GPA falls below 3.0 will be placed on probation. A student on probation must attain a cumulative GPA of 3.0 within two quarters (excluding summer quarter).

A student who receives a grade of C in more than two required courses will also be placed on probation. For any student on probation, failure to regain good academic standing within two quarters constitutes grounds for dismissal.

Evaluation of the overall progress of a student is based on reports received biannually from the tutor or principal advisor and the student's dissertation advisory committee. The reports describe the status of academic achievement, the progress of research and laboratory activities, and identify the projected requirements for the remainder of the program.

It should be stressed that the purpose of such assessment and examination is primarily to aid the student in achieving academic goals by determining depth of understanding of the several areas of study and, when necessary, by identifying problems in order to enlist the aid of other faculty to assist the student in his/her training. Considerable importance in this continuous assessment is placed on the student's ability to communicate. Guided development of the skills required for both literary and verbal presentation of knowledge and ideas, as well as their formulation, is an important responsibility of the faculty in this program.

Preliminary Examination. A comprehensive written preliminary examination is given at the end of the second year of study. This examination covers the recommended program of courses and successful completion is required for proceeding into candidacy.

Graduate Advisory Committee. A committee consisting of three elected faculty members, the chairman of the Department of Immunology/Microbiology and the division director (appointed by the chairman) shall participate in the administration of this program. The functions of this committee are: to assist each student in the design of an appropriate academic program; to guide both the student and faculty in advisor selection and in the appointment of the dissertation advisory and dissertation examination committees; to ensure the continued satisfactory progress of the student; and to initiate any necessary changes in or additions to this program. The Graduate Advisory Committee also shall review biannually the progress of each student throughout the program and shall report annually to the faculty of the division on the progress of each student.

Dissertation Advisory Committee and Dissertation Proposal. It is expected that within four quarters of admission the student will have identified a specialty and a principal advisor with whom to carry out his/her research activities. Concurrent with the development of a research program and within 10 quarters of admission, the following three steps should be taken and accepted by the Graduate Advisory Committee for the student to be accepted into candidacy:

1. formulation of a dissertation advisory committee that shall have five or six members including the principal advisor, three or four faculty members and one "outside" individual with recognized expertise in the candidate's field of interest, selected jointly by the candidate and

principal advisor. The outside individual, not a member of the division, should be a faculty member of an institution of higher education, active in research in the student's area of investigation and willing to maintain active contact with and advise the committee and student concerning the progress of research training for the duration of the candidacy. When additional advisors are required, these also shall be members of the dissertation advisory committee. The chairman of this committee shall be an active member of the Department of Immunology/Microbiology. Each student will be required to meet with his/her dissertation advisory committee at least every six months.

2. presentation to and acceptance by the dissertation advisory committee of a dissertation proposal that should constitute a scholarly outline of work intended, leading to research that will contribute to existing knowledge. The proposal should include a review of the relevant literature, and a detailed outline of the proposed research demonstrating an understanding of the technical and theoretical aspects of the experimental protocols. The student will be required to defend this proposal before the dissertation advisory committee and, if indicated, the Graduate Advisory Committee. This document is considered a blueprint for a suitable dissertation project at the time it is prepared and accepted. Changes in project or strategy during the student's dissertation research may be made with the approval of the advisor and the dissertation advisory committee.

3. successful completion of course work identified in the student's academic program, and adequate performance in a written preliminary examination administered by the Graduate Advisory Committee.

Dissertation. Following admission to candidacy the student shall devote full time to research activities under the guidance of the principal advisor and dissertation advisory committee, and shall be actively involved in all the scholarly pursuits of the Department of Immunology/Microbiology, including tutorials, seminars and journal clubs. The student is expected to seek opportunities to gain experience in teaching and to be involved in the teaching activities of the faculty to the extent that this does not interfere with the progress of the research program.

A student must demonstrate research accomplishment and written communication skills by submitting two or more first-author research papers to refereed journals. The

manuscripts may be incorporated into the student's dissertation.

Following at least four quarters of research activity and agreement by the student and the dissertation advisory committee that research progress is such that a dissertation may be prepared and presented, the Graduate Advisory Committee shall be notified. At least three months prior to the expected date of completion, a timetable will be set by the Graduate Advisory Committee providing a deadline for submission of the dissertation and times for presentation and defense of the dissertation. Additional examinations also may be required and a timetable will be established for these.

The Graduate Advisory Committee will appoint a dissertation examination committee for each candidate. The examination committee shall be composed of the dissertation advisory committee of the student and any additional members of the faculty of The Graduate College deemed appropriate. The dissertation examining committee may, through consultation with the Graduate Advisory Committee, request evaluation of the written dissertation by at least one scientist (external examiner) of international stature in the field of investigation who is not affiliated with Rush University.

The role of the dissertation examination committee is to evaluate the student based on the following: presentation and general defense of the scientific basis of the dissertation in an open lecture; reports of any external examiner(s) concerning the standard of scholarly research presented in the dissertation and an oral defense of the dissertation before the examining committee and approval of the written dissertation.

The dissertation examination committee may request additional examination of the student or evaluation of the dissertation before a recommendation on approval is made to the Graduate Advisory Committee. Upon agreement that the student has satisfactorily met the requirements for the award of the degree of doctor of philosophy, the chairman of the dissertation examining committee and the program director communicates their recommendation to The Graduate College. If within ten quarters following entrance into candidacy the student has not submitted a dissertation or the dissertation advisory committee has failed to notify an intent to submit a dissertation, the Graduate Advisory Committee may assume the role of dissertation advisory committee to evaluate the progress of the student and suggest modifications that would enable candidacy requirements to be completed within one calendar year. It is expected that

students will complete the program in less (generally four to five years) than the seven-year maximum period specified by The Graduate College. Requests to the division director and The Graduate College Council for extension of enrollment beyond this period will be considered only under exceptional circumstances.

Research Activities

Areas of current interest in which research training is offered include the immunobiology of the inflammatory response; the complement system, with special emphasis upon C-reactive protein and the acute phase response, and the proteins related to amyloid; immunopharmacology; cellular immunology, particularly cell-mediated mechanisms in inflammation; tumor immunology; immunobiology of transplantation; growth factors and receptors; the molecular genetics of antibody formation; mechanisms underlying the allergic response; immune interactions of cells and membranes. Also available is training in virology, including the

transcription, replication, and final assembly of negative strand RNA viruses, cellular receptors for human hepatitis B virus, the immunopathogenesis of AIDS; gene expression and pathogenesis of woodchuck hepatitis and herpes viruses, and avian reoviruses which cause arthritis. The application of basic research to questions of human health and disease is a general commitment of the faculty of this program.

The current annotated departmental research report is available on request.

Service and Clinical Activities

In addition to offering the graduate program and conducting active research programs, the department teaches immunology and microbiology to medical students, offers an allergy/immunology residency program, and maintains a close affiliation with the hospital's clinical immunology and microbiology laboratories.



Division of Medical Physics

Philosophy

The Division of Medical Physics offers two programs of study and research leading to a graduate degrees. The faculty members of the division are active in theoretical and experimental research in medical physics and its clinical applications. The diversity of interests of the faculty allows the division to offer graduate degree programs that can satisfy the interests and needs of students in several areas of medical physics: dosimetry; imaging applied to medicine; radiation sources; physics of radiation therapy; physics of diagnostic radiology; physics of nuclear medicine; and radiation protection.

The programs lead to the following degrees:

- Master of Science with a major in Radiological Sciences
- Doctor of Philosophy with Medical Physics as the area of interest.

In addition to the degree programs, the division offers postdoctoral training in medical physics for individuals who have doctorates in physics or physical science. The division also permits students at large to register for course work.

The counterpart Department of Medical Physics of the College of Health Sciences offers a master of science degree with a major in medical physics.

Admission Requirements

In addition to the basic requirements established by the Graduate College, the division of medical physics has requirements for admissions to its programs.

Radiological Sciences Master of Science Program. Applicants for admission to the division will be evaluated initially by the division director and the admissions committee. Considerations will include the applicant's overall academic record, evidence of previous ability to pursue independent studies successfully, recommendations from the applicant's former faculty, and a description of the applicant's scientific research interests. The program director also will determine whether additional supporting evidence would aid evaluation of the

application and, if so, will make appropriate arrangements with the applicant. An interview may be requested.

The Graduate Record Examination (GRE) is not required, although it is highly recommended that applicants take the verbal, quantitative, and the appropriate advanced tests. Further information regarding the GRE may be obtained from the Educational Testing Service, CN 6003, Princeton, New Jersey 08541-6003.

Applications for admission will be accepted by the division for any quarter of the year. Applicants to the program should have received an M.D. or D.D.S. degree from an accredited institution prior to enrolling in the program. The studies required for the master's degree may be carried out concurrently with a residency program provided prior approval is given by the chairmen of the departments and divisions involved. A cumulative grade point average of 3.0 (A = 4.0) is required.

Medical Physics Doctor of Philosophy Program. The Division of Medical Physics seeks students who demonstrate motivation toward research and teaching, as well as a capacity for independent study in their undergraduate or graduate education. Applicants for admission to the division will be evaluated initially by the division director and the admissions committee. The division director will determine whether additional supporting evidence would aid evaluation of the application, and, if so, will make appropriate arrangements with the applicant. An interview may be required.

All applicants must meet the following criteria for admission:

- a bachelor of science degree in physics from an accredited college or university or
- a bachelor of science degree in physical science with a minor in physics from an accredited college or university
- completion of course work in physics--mechanics, heat, atomic and nuclear physics, thermodynamics, and quantum mechanics. If the student is deficient in physics courses, additional courses will be required.

- completion of one year of college chemistry with laboratory. This requirement may be satisfied within the Ph.D. program.
- prior success in pursuing independent study
- cumulative grade point average (GPA) of at least 2.5 in college work
- cumulative science GPA of at least 3.0 in college work
- results of the GRE taken within the last three years. Results should be directed to The Graduate College Admissions Office.
- three letters of recommendation from previous college or university instructors
- a written description of the applicant's scientific research interests

Applications for admission will be accepted for all quarters of the year. Incoming students with no graduate training should apply for the fall quarter due to the scheduling of required courses. Applications for the fall quarter will be accepted until March 1, and a decision will be sent to the applicant by April 15. Later applications for the fall quarter may be accepted if space is available. Students with research experience or medical school education may begin graduate study during any quarter of the year.

Curriculum

Radiological Sciences Master of Science Program. The Studies required for the master's degree may be carried out concurrently with a residency program, provided prior approval is given by the chairman of the department in which the resident is being trained. The Master of Science degree is designed to be completed by full-time students in one calendar year; part-time students will, of course, require more time. Each student will submit a thesis on his/her research and will take a final examination in defense of the thesis.

Residents in Therapeutic Radiology. The following courses are required for Residents in Therapeutic Radiology:

MPH 457, 458, 481, 482, 483, 484, 486, 492, 531

In addition to these courses, MPH 598, Thesis Research, is required. The sequence of courses

MPH 501, 502, and 503 may be chosen as electives in the master's degree program.

Residents in Diagnostic Radiology and Nuclear Medicine. The following courses are required for residents in diagnostic radiology and nuclear medicine:

MPH 457, 458, 460, 461, 464, 465, 471, 475, 490

In addition to these courses, MPH 598, Thesis Research, is required. The sequence of courses MPH 501, 502, and 503 may be chosen as electives in the master's degree program. Various other elective courses are available at Rush University.

Medical Physics Doctor of Philosophy Program. The Ph.D. program is based on a study and research schedule that should be completed within four to five years of full-time study beyond the bachelor's degree. The minimal residency requirement established by The Graduate College is eight quarters of full-time enrollment. During the first year, the student will be committed to completing required course work and deficiencies, if any. Elective courses in other divisions will be available throughout the program. During the second and later years, required courses will be completed, and the student will be encouraged to enroll in appropriate advanced courses within The Graduate College. Ordinarily, research will begin during the latter part of the second year, and it will continue as the primary activity throughout the third and later years.

The following courses are required:

MPH 457, 458, 460, 463, 471, 481, 482, 483, 486, 491, 501, 502, 503, 504, 505, 531, 542, 561, 571, 590, 699

PHY 555

ANA 465

A student may choose electives from a variety of other courses available at Rush University.

Academic Policies

Radiological Sciences Master of Science Program. A minimum of 48 quarter hours of required courses, including research, is required for the Master of Science degree with a major in Radiological Sciences. Of these a minimum of 18 quarter hours of medical physics courses (excluding research) is required. A minor is not

necessary in this program. Students must maintain a cumulative grade point average (GPA) of 3.0. The maximum amount of credit acceptable for transfer from another institution is 12 quarter hours. There is no foreign language requirement. The time limit for completion of the program is five years.

Academic Progression. The graduate program director will function as the academic advisor to new students in the program. The director will determine the course schedule with the student and will monitor the student's progress.

As soon as practical after the student has entered the program, he/she should select the area of research he/she wishes to consider for the master's thesis. The student should seek out a faculty member of the Division of Medical Physics who will accept the supervisory role of scientific advisor.

Once an advisor is chosen, the advisor and the student will assemble an advisory committee of five members, at least three of whom are on The Graduate College faculty. The advisor will serve as chairman of the advisory committee. The committee will be responsible for adapting continued course work to the student's needs and for providing advice and evaluation at all stages of the graduate education. Specifically, the committee will evaluate the dissertation proposal, the dissertation, and the performance at the dissertation defense.

Before the specific thesis research is begun, a detailed proposal, including a literature review, must be presented to the student's advisory committee. At that time, the student will be required to defend the proposal orally, demonstrating an understanding of the goals and methods of his/her study. When the committee is satisfied with the proposal, the student may begin the research project. Although research will be closely supervised by the major advisor, attainment of the research goals is the student's responsibility.

Thesis Defense. Thesis. The thesis is a scholarly work based on an original project. Its format and review by the advisory committee and dean must comply with the requirements of The Graduate College.

Thesis Defense. The final examination may be taken upon acceptance of the dissertation by the dean of The Graduate College and must precede the projected date of graduation in accordance with a schedule determined by The Graduate College.

Oral defense of a thesis serves as the final examination in partial completion of the

requirements for the M.S. degree. The examining committee consists of a minimum of five faculty members approved by the division director and graduate studies committee. At least three examiners, including the student's principal and associate advisors, will be selected from within the division. Two examiners may be selected from outside the division, preferably, though not necessarily, from outside the division.

Passing the final examination is based upon the recommendation of the majority of the examiners. In the event that the student fails to pass the final examination, the student may appeal to the dean of The Graduate College who, upon consultation with all parties concerned, may recommend a course of action to be taken.

Medical Physics Doctor of Philosophy Program.

A minimum of 40 quarter hours of medical physics courses (excluding research) must be completed successfully. Additionally, at least 18 quarter hours of minor course credit are required. A grand total of 150 quarter hours of academic credit is required for the Ph.D. degree.

A maximum of 60 quarter hours of transfer credit will be accepted.

There is no foreign language requirement.

Academic Progression. The graduate program director will function as the academic advisor to the student during the first year. The director will, during this time, determine the course schedule with the student and will monitor the student's progress.

Toward the end of the first year, the student will be expected to take a qualifying examination that covers basic physics and courses in the division that have been completed. This examination includes written and oral components. Based on the results of the qualifying examination and performance in course work, the student may be permitted to continue in the program without conditions. If the student's performance is poor, he/she may be either permitted to continue with added requirements of a remedial nature or dismissed from the University.

During the second year, the student should select the area of research he/she wishes to consider for the Ph.D. dissertation. The student should seek out a faculty member of the Division of Medical Physics who will accept the supervisory role of scientific advisor.

Once an advisor is chosen, this advisor and the student will assemble an advisory committee of five members, at least three of whom are on The Graduate College faculty. The advisor will serve as chairman of the advisory committee. The committee will be responsible for adapting

continued course work to the student's needs and for providing advice and evaluation at all stages of the graduate education. Specifically, the committee will evaluate the dissertation proposal, the dissertation, and the performance at the dissertation defense.

Toward the end of the second year or at the beginning of the third year, the student will be expected to take a preliminary examination. The preliminary examination consists of a written comprehensive and an oral examination. This examination can only be given on the recommendation of the advisory committee after completion of all required courses and elimination of any deficiencies. Administered by the faculty of the division, the examination tests general knowledge of medical physics. The level of performance on this examination will determine whether the student is admitted to candidacy for the Ph.D. degree. Students who fail to gain admission to candidacy may be retested one time only, 6 to 12 months after the original examination date.

Before the specific dissertation research is begun, a detailed dissertation proposal, including a literature review, must be presented to the student's advisory committee. At that time, the student will be required orally to defend the proposal, demonstrating an understanding of the goals and methods of his/her study. When the committee is satisfied with the proposal, the student may begin the research project. Although research will be closely supervised by the major advisor, attainment of the research goals is the student's responsibility.

Dissertation Defense. Dissertation. The dissertation is a scholarly work based on an original project. Its format and review by the advisory committee and dean must comply with the requirements of The Graduate College.

Dissertation Defense. The final examination may be taken upon acceptance of the dissertation by the dean of The Graduate College and must precede the projected date of

graduation in accordance with a schedule determined by The Graduate College.

Oral defense of the dissertation serves as the final examination in partial completion of the requirements for the Ph.D. degree. The examining committee consists of a minimum of five faculty members approved by the division director and graduate studies committee. At least three examiners, including the student's principal and associate advisors, will be selected from within the division. Two examiners may be selected from outside the division, preferably, though not necessarily, from outside the University. Distinguished scientists may be invited as guests of the division to examine the dissertation and to participate in the final oral defense.

Passing the final examination is based upon the recommendation of the majority of the examiners. In the event that the student fails to pass the final examination, the student may appeal to the dean of The Graduate College who, upon consultation with all parties concerned, may recommend a course of action to be taken.

Research Activities

Research by medical physics faculty members includes: the study of basic mechanisms by which radiation transfers energy to biological and chemical materials; the development of new techniques for directing and measuring various radiations used in detection, diagnosis, and treatment of cancer; the application of radioactive tracers to diagnosis and to the study of metabolic processes; the optimization of physical parameters for specific studies in diagnostic medical imaging, including radiology, computerized radiography, and tomography, as well as nuclear magnetic resonance imaging and radionuclide imaging and dosimetry in radiation therapy, radiation protection, radiobiology, and hyperthermia.

Rush University issues an annual research report that summarizes research projects of the entire faculty.

Division of Pharmacology

Philosophy

The Division of Pharmacology offers study and research programs leading to the degree of doctor of philosophy. The division is composed of faculty members active in basic medical research, pharmaceutical sciences and clinical investigation. Such diversity of interest allows this division to design doctoral programs that satisfy the needs of students interested in most aspects of pharmacology. A program of study has also been created for students who wish to enroll concurrently in this division and in Rush Medical College.

The goal of the division is to provide excellent training in research and teaching. Each student has the opportunity to participate in research of the most basic chemical nature and in research aimed at solving disease problems. Emphasis is also placed on the development of drug analysis methods for research and as a practical laboratory problem in a service setting, especially as related to drug trials and other areas of clinical investigation. Teaching exposure is encouraged throughout the entire training period.

Admission Requirements

In addition to the basic requirements established by The Graduate College, the Division of Pharmacology has the following requirements for admission to its program. The academic experience of the student should include a minimal undergraduate GPA of 3.0 overall and a 3.5 in science courses ($A=4.0$). Recommended courses include calculus, college physics, organic chemistry, and physical chemistry. Students with deficiencies in basic course work can be admitted to the program. However, for any such applicant, the division will retain the right to require extra course work that will then be considered a prerequisite for admission to candidacy for the Ph.D. degree.

The Graduate Record Examination (GRE) is required by the division and it is highly recommended that applicants take the verbal, the quantitative, the analytical, and the appropriate advanced tests. Students should minimally achieve an aggregate score of 1500 on the three basic parts of the test.

Applications for admission will be accepted by the division for all quarters of the year. Incoming students with no graduate training should consider applying only for the fall quarter due to the scheduling of the basic required course sequence. Students with research experience can begin graduate studies during any quarter of the year, and such applicants should expect to continue their research or begin an active research program within the division at the time of their admission. In either case, early application is recommended because of the small number of places available.

Applications will be evaluated by the director and the admissions committee of the Division of Pharmacology. The admissions committee will base its recommendation regarding admission of the applicant on several factors. All prior academic experience and the letters of recommendation will be evaluated for an indication of the applicant's potential for success in graduate studies. A statement by the applicant describing his/her own goals and motivation will be studied to determine the compatibility between the applicant's goals and the capabilities of the graduate program. With rare exceptions, all applicants will be required to appear for an interview with faculty members in the Division of Pharmacology before admission to the program. A recommendation from the division regarding the applicant's admission will be presented to the dean and The Graduate College Council for final approval.

Curriculum

This program is based on a study and research schedule that should be completed within three to six years of full-time study. During the first year the student is usually committed to completing required course work and eliminating deficiencies, if any. Elective courses in other divisions will be available throughout the program. During the second and later years, required courses are completed and the student is encouraged to enroll in appropriate courses within this and other divisions of The Graduate College. Research ordinarily begins during the first year and continues as the primary activity throughout the second and later years.

The required courses for all graduate students in pharmacology are biochemistry, medical

advanced topics, pharmacokinetics, and laboratory instrumentation.

Concurrent M.D./Ph.D. Program

The graduate program in pharmacology will be offered to the student who has been admitted to both the graduate program in the Division of Pharmacology and to Rush Medical College and who elects to begin both programs of study in the same year. During the first two years, the student will complete the required courses in the pharmacology graduate program as well as the regular medical college curriculum for that period of time.

The student will then interrupt Rush Medical College enrollment and concentrate full time on graduate studies in the Division of Pharmacology. When the graduate work is complete, the student will continue with the clerkship program in the medical college.

The student will be strongly encouraged to begin a research program during the summer before course work begins. Research can be included in the curriculum at any time. After the second year, the student will begin full-time

enrollment in The Graduate College, and the clerkship program in Rush Medical College will be delayed until the graduate work is complete. During this time, the student will complete the required course work, enroll in advanced or elective courses, pass the comprehensive qualifying examination, present and defend a suitable dissertation protocol, complete dissertation research, and present and defend an acceptable dissertation. The Ph.D. degree will be awarded by Rush University upon the successful completion of this training program. The student will then continue with the clinical curriculum of Rush Medical College.

Students who are admitted to the Division of Pharmacology graduate program and to Rush Medical College but who do not begin these study programs at the same time may also benefit from this combined curriculum. An individual study program which includes available aspects of this curriculum can be designed for such students.

Students who enter this program are subject to the full conditions and requirements of both colleges.

Curriculum: Pharmacology

Fall Quarter	Year 1	Quarter Hours	Fall Quarter	Year 2	Quarter Hours
BCH 471	Medical Biochemistry I	6	PHR 501	Medical Pharmacology I	5
PHY 451	Physiology	5	PHR 598	Research	7
PVM 541	Biostatistics I	4			12
		15			
Winter			Winter		
BCH 472	Medical Biochemistry II	6	PHR 502	Medical Pharmacology II	4
PHY 452	Physiology	5	PHR 551	Pharmacokinetics	3
PVM 542	Biostatistics II	3	PHR 598	Research	5
		14			12
Spring			Spring		
PHR 521	Lab Instrumentation	3	PHR 503	Medical Pharmacology III	2
PHR 598	Research	4	PHR 598	Research	10
		12			12
Summer			Summer		
PHR 598	Research	12	PHR 598	Research	12
					12

Academic Policies

(Additional policies are listed in The Graduate College and in the Academic Information sections.)

Academic Progression. Academic Advisor, Major Advisor. The graduate division director functions as the academic advisor to the student during the first year. The director, during this time, determines the course schedule with the student and monitors the student's progress. Beginning in the first year, the student is expected to gain laboratory experience. This activity is intended to lead to the definition of research interests and to the selection of a major advisor. The major advisor, a faculty member in the Division of Pharmacology, then accepts the supervisory role in the development of the student as a scientific investigator.

Academic Requirements Each student will be responsible for satisfactorily completing the sequence of required courses. This division requires a grade of B or better in all required courses. Elective courses may be taken for a grade of Pass/No pass and all departmental research courses (PHR 598) will be graded in the same way. Students will be allowed adequate opportunity to remedy a course grade deficiency on an individual basis. However, failure to maintain a B grade average and adequate grades in required courses is considered cause for dismissal.

Advisory Committee. After a major advisor is chosen, this person and the student assemble an advisory committee. The committee consists of five graduate college faculty members, no more than four to be from the Division of Pharmacology, including the major advisor who serves as chairman. This committee is responsible for adapting continued course work to the student's needs and for providing advice and evaluation at all points in the graduate education experience. Specifically, the committee evaluates the dissertation protocol, the dissertation and performance at the dissertation defense.

Comprehensive Qualifying Examination.

Toward the end of the second year the student usually is expected to take the comprehensive qualifying examination. This examination can only be given with the recommendation of the division director after elimination of all deficiencies and completion of all required courses. The examination is designed to test general knowledge in pharmacology, and it is administered by the Division of Pharmacology faculty. The level of performance on this examination determines if the student is admitted to candidacy for the Ph.D. degree. Students who are unsuccessful in gaining admission to candidacy for the Ph.D. degree may retest one time only, 6 to 12 months after the original examination date.

Dissertation Research. Before the specific dissertation research is begun, a detailed dissertation protocol, including a literature review, must be presented to the Advisory Committee. At this time the student is required to defend orally the research proposal by demonstrating an understanding of its goals and of the methods used to achieve those goals. When the committee is satisfied that these qualifications have been met, it recommends that the student begin the research project. Although the research is closely supervised by the major advisor, the student is expected to accept the responsibility for attainment of the research goals.

Once the research is complete, the student presents a reading copy of the dissertation to the advisory committee for its evaluation and comments. The committee is responsible for offering suggestions to the student on how the work may best be presented in a dissertation. Following this advice, the student completes the dissertation and makes a formal presentation of it to the Advisory Committee as the dissertation defense.

The awarding of the Ph.D. degree requires the demonstration of a capability for independent research and a contribution to scientific knowledge as judged by the Advisory Committee, the division faculty, the dean, and The Graduate College Council.

Research Activities

Research experience is being offered in the following general areas: drug effects on cellular metabolism, drug metabolism, pharmacogenetics, cardiovascular pharmacology, biochemical pharmacology, neuropharmacology, and clinical pharmacology. Current research projects that may be available to graduate students in the Division of Pharmacology include: mechanism of action of various redox drugs as investigated by studies of red cell metabolism; hereditary and acquired disorders of the pentose phosphate pathway, glycolysis and hemoglobin; animal models of tardive dyskinesias; parkinsonism and related disorders; slow acetylation as related to drug effects and disease such as lupus erythematosus; clinical drug testing (Phase I and II); analgesic properties of cholinergic drugs in relation to the morphine receptor theory; pharmacology of primaquine

and mefloquine; clinical pharmacology of methotrexate; prostaglandin metabolism in endotoxin shock; pharmacology of platelet activating factor; clinical pharmacology of new antibiotics and new drug assays.

Service and Clinical Activities

The graduate division includes faculty members who are involved in service and clinical research activities. The service laboratory designs and performs selected drug assays on patient samples for clinical cases where the monitoring of drug levels is necessary for effective therapeutics or to avoid toxicity. The Clinical Pharmacology Unit tests new drugs for toxicity and for effectiveness in human subjects. All students are encouraged to participate in these activities even though their interests may lie elsewhere.



Division of Physiology

Philosophy

The program of the graduate Division of Physiology provides state-of-the-art training in the most quantitatively oriented areas of modern physiology and biophysics. To this end a limited number of students are invited to join particular research laboratories as predoctoral fellows. Most of the training occurs in this setting. The sole goal of the faculty is excellence in research, and it expects to develop students who will become future leaders in the field.

Admission Requirements

Students who desire to specialize in this program are strongly advised to obtain a broad scientific foundation, including work in the related sciences. Courses in some or all of the following fields are suggested for attainment of this objective: physics, including electronics; chemistry, including physical chemistry; mathematics, including differential equations, and molecular and cell biology or cell physiology.

An applicant who holds a degree from an accredited institution will be considered for admission on the basis of the following criteria:

- an undergraduate record of superior quality demonstrating proficiency in quantitative science
- a well-organized plan for graduate study and research compatible with expertise in the division
- recommendations from at least three college faculty members acquainted with the character of the applicant
- ability to function in a program stressing an independent approach to the acquisition of knowledge
- other materials that may be required by the division director

The Graduate Record Examination (GRE) is recommended but is not required. Except in unusual cases, the minimum prerequisites for admission will be the attainment by the applicant of a 3.0 overall average ($A = 4.0$) in undergraduate studies with a 3.5 average in science courses, preferably including two years of physics or engineering, inorganic and organic

chemistry, physical chemistry, advanced calculus, ordinary differential equations, cell biology, molecular biology, or cell physiology.

Applicants for admission to the division will be initially evaluated by the division director and chairman. Considerations will include overall academic record, evidence of previous ability to pursue independent studies successfully, recommendations of the applicant's undergraduate faculty, and the description of the applicant's scientific research interests. The division director also will determine whether additional supporting evidence would aid evaluation of the application and, if so, will make appropriate arrangements with the applicant to submit such evidence.

Applications judged by the division director to demonstrate satisfactory credentials and interests compatible with the research facilities of the faculty will then be evaluated by all faculty members with expertise in the area(s) of interest of the applicant. Considerations in this phase will include not only academic ability but also the resources available to support research in the indicated area. An interview may be requested. Selection of applicants will be by invitation of a faculty member in the division willing and able to serve as the student's principal advisor and research sponsor after endorsement of the selection by the division director, The Graduate College Council, and the dean. In special circumstances, exceptions to this procedure may be made for students with unusual promise but with no firm commitment to a particular area of research. In such cases, the program director will serve as interim principal advisor. Finally, in the case that the division director would be the principal advisor of a student, the physiology department chairman shall assume the duties of division director with respect to that student.

Curriculum

Courses: Usually prior to starting the program students will have selected a faculty member as principal advisor. All students admitted to the division will be required to enroll in the medical physiology sequence as soon as possible after admission, and before the dissertation proposal, and obtain an average grade of B or better over all quarters. Each student will, in the first two years, enroll in courses appropriate to the

students research interests as agreed upon in consultation with the principal advisor and director of the graduate program.

It is anticipated that courses deemed essential to the student's graduate training by the division occasionally will not be available in the Division of Physiology or other divisions of The Graduate College. In this case, arrangements will be made for the student to enroll in such courses at other institutions and performance in these courses will be required to be at the same level as for courses at Rush. In certain circumstances, a program of supervised independent study may be recommended as an alternative to particular course work.

Individual course requirements may be exempted on the basis of a past academic record or by the successful completion of a special examination covering the content of the required course. Such exemptions will not be made automatically solely on the basis of a past academic history but will be carefully judged on an individual basis by the division director and Advisory Committee. Unless waived students will enroll in eight credit hours of course work outside the Division of Physiology.

Course Offerings: The following courses will be available, subject to demand and limitation, to graduate students within The Graduate College.

- PHY 451 Physiology I
- PHY 452 Physiology II
- PHY 502 Introductory Membrane Biophysics
- PHY 503 Physiology of Striated Muscle
- PHY 504 Neurophysiology
- PHY 521 Mathematical Methods for Physiologists
- PHY 523 Circuit Theory and Practical Design
- PHY 531/532 Physiological Modeling
- PHY 590 Special Topics in Physiology
- PHY 598 Introduction to Research
- PHY 640 Applied Electrophysiology
- PHY 641 Molecular Mechanisms in Control of Ion Permeability
- PHY 651 Advanced Topics in Muscle Physiology
- PHY 653 Problems in Synaptic Physiology
- PHY 655 Sensory Neurophysiology
- PHY 656 Neural Correlates of Behavior
- PHY 690 Research Topics in Physiology
- PHY 699 Dissertation Research

Academic Policies

(Additional policies are listed in The Graduate College and in the Academic Information sections.)

Dissertation Proposal. Upon admission to the division, the student and his/her principal advisor shall begin to make preparations for a proposal upon which the student's original research project will be based. Such preparations will include intensive study of the literature in the student's field of interest, instruction in the basic laboratory skills necessary for professional development in the field and any other requirements established by the principal advisor and division director, in addition to the course requirements discussed above.

No later than 36 months after admission, the candidate shall present to his/her dissertation committee an original proposal for contribution to knowledge in his/her specialty. It shall include an extensive review of the relevant scientific literature, a description of the technical aspects of the proposed studies, an outline of the anticipated experimental approach to the major problem of interest and a discussion of possible results and their interpretation. The student will be expected to defend both his/her proposal and general ability to achieve professional competence before the dissertation committee.

The dissertation committee shall have at least four members including the principal advisor, the division director, and, whenever possible, an individual outside the institution with national stature in the candidate's field of interest selected jointly by the candidate, principal advisor, and division director. In addition to evaluating the content of the dissertation proposal, the outside member shall have a responsibility to maintain close and frequent contact with the student and principal advisor and to advise the division director concerning the progress of the academic program.

The dissertation proposal may be submitted to the faculty prior to completion of course requirements in order to enable research activity to begin, but the student will not be formally admitted to candidacy until this is satisfactorily completed.

Candidacy. Upon acceptance of the dissertation proposal, the student shall be admitted to candidacy for the Ph.D. and shall be expected to devote his/her energies fully to the program. A minimum residency requirement of one calendar year following admission to candidacy must be met by all students unless special exceptions are granted by the division

director and dean. The principal advisor shall make frequent reports to the division director concerning the student's progress, and, should either faculty member or the candidate feel it appropriate, the dissertation committee can be called into session to judge the student's continued participation in the graduate program or to determine possible alterations in the area of his/her research efforts. In addition, the student and principal advisor will be expected to consult periodically with the other committee members who may also request the division director to call formal meetings of the dissertation committee.

Conflicts between the student and/or any members of the dissertation committee not resolvable by the full committee may be referred to the advisory committee of the division or higher authority as specified in the policies and procedures of The Graduate College.

The degree of doctor of philosophy is given in recognition of high attainment and ability in a particular field of scientific research as evidenced by submission of a dissertation showing power of independent investigation and forming an actual contribution to existing knowledge. Such dissertation will be submitted to the candidate's dissertation committee for review at least one month before the dissertation is defended orally. The dissertation committee will ordinarily request an evaluation of the candidate's dissertation by a scientist of national stature not affiliated with Rush University.

Acceptance of the dissertation by the dissertation committee will be reviewed by The Graduate College Council and the dean, along with the candidate's entire academic performance in The Graduate College. Determination of completion of all requirements will result in the dean's recommendation that the degree be awarded at the next scheduled commencement exercises of Rush University.

Should the candidate not have submitted a dissertation three years after admission to candidacy, the dissertation committee shall be convened to evaluate the candidate's progress, and, if proper, to suggest alteration in the program.

Research Activities

Individual Research Projects

Exocytosis. Fusion between membranes is a widespread biological phenomenon responsible for diverse processes such as release of neurotransmitters and hormones, viral infection of cells, and fertilization of egg by sperm. Drs. Walter Niles and Fred Cohen have been studying the fusion between phospholipid vesicles and planar membranes to determine the physico-

chemical principles that govern fusion on the level of phospholipids alone. When vesicles bound to a planar membrane are osmotically swollen, they develop a hydrostatic pressure (ΔP) and fuse with the membrane. They have completed a theoretical analysis to explain the development of the intravesicular ΔP that drives fusion and they have calculated the steady-state ΔP from the equations of irreversible thermodynamics for the two methods of swelling that are used experimentally. The critical parameters of the model are the solute and water permeabilities through both the bare bilayer and through the channels imbedded in the vesicular membrane. As these parameters are experimentally measurable quantities, the theory is based on first principles and is *not* a curve fit. The theory predicts the rates of fusion that are experimentally seen. The agreement between theory and experiment shows that ΔP is undoubtedly driving fusion. The theory has utility in designing protocols to improve reconstitution of ion channels in planar membranes.

These investigators are developing a model system to study virus-membrane interactions. To detect virus binding they labelled virus envelope with the fluorescent probe octadecyl rhodamine. The labelled virus were pressure-ejected at the planar membrane and binding was detected by video fluorescence microscopy. The virus did not bind to asolectin membranes, but did bind to asolectin/ganglioside (1/1 by wt) membranes. This is in agreement with previous investigators who found that gangliosides function as receptors for Sendai. There was no detectable spontaneous transfer of dye into the palnar membrane. It thus appears that systematic study of virus binding can be performed in this system.

To assess the feasibility of studying virus-mediated fusion, unilamellar vesicles several microns in diameter were loaded with the membrane-impermeant flourescent dye calcein. Sendai virus was added to one side of the planar membrane and then pressure-ejected vesicles at the membrane. With gangliosides in the planar and vesicular membranes, Sendai promoted binding of vesicles. It thus appears that the Sendai bridges the vesicle and planar membranes. As it is known that Sendai promotes cell-cell fusion at 37°C, the temperature of the solutions bathing the planar membranes were raised to 37°C to determin if virus promotes the fusion of vesicles to planar membranes as assayed by monitoring release of dye to the other side of the planar membrane. Dye was spontaneously released as the temperature was raised and in the absence of

virus dye was not released. However, the amount of release was very variable. The basis for this variability is currently under investigation.

Protein insertion into membranes and voltage-dependent channels. In collaboration with Dr. E. William Cramer, Purdue University, Dr. Fred Cohen is studying the mechanism by which colicin E1 inserts into phospholipid bilayer membranes and forms a voltage-dependent ion channel. The colicin E1 sequence is known, the channel-forming domain is localized to the carboxy-terminal region of the molecule, mutations are readily generated, and the resulting protein quickly and readily purified. Further, four other colicins have been sequenced and show significant sequence identity to E1. Colicin E1 is thus useful for studying protein insertion into membranes and mechanisms for voltage-gating of channels.

Within the channel-forming domain, a 35 hydrophobic amino acid segment exists that terminates 14 residues from the COOH-terminus. This segment probably lies in the interior of the water-soluble form of the protein, and unfolds at an early stage in channel formation, thereby serving as an initial hydrophobic anchor. When mutant proteins were made that substituted the negatively charged glutamate for a non-polar residue within the hydrophobic stretch they found, in accord with the above view, that the mutants exhibited much reduced activity. The mutants had unaltered voltage-dependent activity, indicating that (not surprisingly) the hydrophobic stretch is not important for voltage gating. The anion selectivity of the mutant channels were reduced, as expected from electrostatics if the altered residues are near the lumen of the channel. Mutants that lack either the entire 14 residue, COOH-terminal polar segment, or just the last 11 COOH-terminal residues, flanking the hydrophobic stretch showed greatly reduced binding and channel activity, demonstrating the importance of this stretch. Immediately adjacent to the hydrophobic segment and within the 14 residue polar stretch are an acidic aspartate and two positively charged lysines. Site-directed point mutations at these residues did not significantly affect channel activity, an unexpected result as it was thought that the lysines were involved in the initial binding of the protein to membranes. Removal of the lysines did, however, reduce anion selectivity. These residues probably lie at the mouth of the channel on the cis side of the membrane. There is a single proline within the channel-forming domain of colicin E1, a proline conserved in the five channel-forming colicins that have been sequenced. When a serine was substituted for

the proline, no changes in activity, voltage-dependence, or ion-selectivity were observed. Lastly, when a neutral glycine that is on the N-terminal side of the hydrophobic segment was changed to a positively charged arginine, no changes in channel properties were observed. Thus changing the charge of a single amino acid that is part of the channel does not necessarily alter ion selectivity.

Pulmonary Cells. Type II alveolar epithelial cells. The laboratory headed by Drs. Tom DeCoursey and Elizabeth Jacobs is interested in the relationship between ion channels and the physiological function of cells, especially the possible involvement of ion channels in disease, and as a potential mechanism for intervention in pathological situations. The main project in the lab is "patch-clamping" type II alveolar epithelial cells. These cells: (1) produce, secrete, and take up (i.e. reprocess) pulmonary surfactant, a substance which keeps our alveoli from collapsing every time we exhale; (2) when there is injury to the lung, type II cells proliferate and differentiate into type I epithelial cells, which are flat non-secretory cells covering about 95% of the alveolar surface. The laboratory is investigating the mechanisms by which ion channels are involved in the functions of type II cells.

Specifically, they aim to characterize the ion channels in type II cells, and to correlate the presence and/or activation of these channels with the physiological functions of type II cells. They have characterized two types of K-selective ion channels in type II cells, (a) one resembling the delayed rectifier of excitable cells, (b) the other similar to an unusual channel described previously only in mouse T lymphocytes. Both of the channels open when the membrane is depolarized, inactivate with maintained depolarization, and are blockable by tetraethylammonium ions (TEA). The delayed rectifier channels are present in at least 80% of all type II cells studied, the other type is present in about 20% or fewer of all cells. Comparison of other properties of cells expressing each type of K channel revealed that cells with delayed rectifier channels had larger specific capacitance, suggesting that their membranes are more folded. Future studies may reveal whether these two channels are present in functionally different subtypes of type II cells.

Another important area is to catalog the pharmacologic sensitivity of the channels, with the ultimate goal of correlation with the pharmacologic sensitivity found in surfactant turnover assays. The necessary biochemical assays are being implemented in their laboratory. Type II cells in primary culture have

small numbers of channels, so Drs. DeCoursey and Jacobs have studied several cell lines derived from type II cells in order to find a more convenient experimental model for the pharmacologic studies. They have found that a cell line derived from rat type II cells, CCL-149, has delayed rectifier channels in large enough numbers to facilitate these studies. Another cell line derived from human type II cells, A549, has been widely used as a model for type II cell function. Ion channels present in A549 cells are quite different from those in rat type II cells. This result may reflect species differences which would need to be considered in any attempt to extrapolate from data in rat cells to human type II cells.

Endothelial Cells. In collaboration with Dr. Michael Silver, Drs. DeCoursey and Jacobs have been studying the channels in endothelial cells. These cells line blood vessels, and have recently been implicated in transducing humoral signals to vascular smooth muscle cells. These investigators have found that cultured endothelial cells have inwardly-rectifying potassium channels present in most membrane patches. Macroscopic currents due to these channels are present in endothelial cells studied in the "whole-cell" configuration. In addition to being an important cell, endothelial cells may be an ideal preparation in which to study various biophysical properties of inward rectifier channels.

Lymphoma cells. Dr. Tom DeCoursey is working with graduate student Mr. Mark Shapiro on patch clamp studies of the Louckes lymphoma cell line. They have discovered a novel K-selective channel in these cells which has not been previously described in any cell. They are in the process of systematically characterizing this ion channel. They hope to discover the mechanism which causes this channel to appear with a variable delay and to correlate the function of the channels with the abnormal proliferation of these cells.

Ionic Permeation and Excitation-Contraction Coupling. Dr. Robert Eisenberg is working in several areas related to ionic permeation and excitation-contraction coupling:

1. Together with J. Tang and J. Wang, Dr. Robert Eisenberg is using the patch clamp method to study single channels in the sarcoplasmic reticulum (SR) of skinned muscle fibers. This represents the first application of the patch clamp method to internal membranes. So far a detailed investigation has been made of the resting potential of the SR (there is none, as is expected) and of the SR- K^+ channel. Measurements are underway of the two Ca^{++}

channels of the SR, which are critical to one of the main functions of the SR, namely the control of cellular concentration. In the future, macroscopic recordings will be made from the entire SR compartment, using two gigasealed pipettes, one to record potential and the other to pass current. In this way the SR membrane conductance (and capacitance) and cable properties can be studied directly.

2. Together with R. Moghaddamjoo and R. Levis, Dr. Eisenberg has developed an edge detection algorithm to measure single channel currents even in the presence of substantial noise. The algorithm makes no assumption about the data and is automatic, requiring no subjective decisions. It provides an objective estimate of its own (sampling) error. Currently, the algorithm is able to detect single channels, with minimum error (4%) in signal to noise ratios of 1 (rms). In this signal to noise ratio, the channels are essentially invisible before signal processing. Significant improvement should be possible adding well known methods of amplitude discrimination to the present edge detector.

3. Together with P. Gates and K. Cooper, Dr. Eisenberg has developed a theory of ionic diffusion through channels. In essence, the theory provides expressions for the rate constants of barrier crossing alternative to those from Eyring transition state theory. The new expressions depend on the entire shape of the potential barrier, but reduce to simple exponential expressions (nonetheless different Eyring expressions) when the barrier are parabolic. Eyring theory assumes ions cross potential barriers nanometers wide *without collision with other atoms* but both experiments and theory in physical chemistry show that collisions occur at a rate of some 10^{25} sec^{-2} . Thus, the diffusion theory seems more reasonable than the traditional Eyring theory and hardly more complex.

4. Together with P. Gates and K. Cooper, Dr. Eisenberg is applying the theory of ionic diffusion to channels occupied by at most one ion. The theory recovers the previous results of Levitt and allows a reasonably realistic treatment of channel entry. It permits the definition of phenomenological variables useful in organizing and fitting experimental data from a variety of channels. And it can be extended to deal with many of the central issues of "channel-ology", including selectivity, blocking, and open channel conduction.

5. Together with Professor Victor Barcilon (a mathematician from the University of Chicago), Dr. Eisenberg is writing a book *A First-Passage*

through *Biological Channels* using powerful mathematical techniques to analyze stochastic problems of ionic diffusion through protein channels in biological membranes.

6. Together with A. Hainsworth and R. Levis, Dr. Eisenberg is studying the noise of open channels, both in the lens of the eye and the SR. The open channel noise is analyzed with Fourier techniques, providing a great deal more resolution (say $\times 10$) than time domain methods. The analysis should be useful in testing the theories described in above, and it should be very useful in describing many familiar experimental phenomena (e.g., open channel block, flicker) with much more resolution. Finally, because the power spectrum of noise is *independent* (essentially) of the magnitude of the current, it should provide much additional information about the conformational states of the channel protein and their variance.

Human Motor Control. Dr. Gerald Gottlieb studies human motor control systems. This necessitates developing techniques that can be used at the level of intact organisms. His laboratory, the Motor Coordination Laboratory, studies how humans control the forces of their muscles to perform purposeful tasks. The physiological study of human beings presents many fascinating problems, including how to make meaningful and informative measurements without harming one's subjects or discouraging them from participating in further studies.

In the Motor Coordination Laboratory, measurements of limb motion and forces can be made in specially designed manipulanda. Information about the neural control of movements can be obtained by recording the natural electrical activity of contracting muscles, placing electrodes on the skin overlaying them. Motors can resist voluntary movements or generate passive movements to evoke reflex responses. From such studies, one can infer rules for how voluntary movements are performed and what role the classically described reflex mechanisms may play in their control.

Another class of studies is to evaluate the effects of neurosurgical procedures in ameliorating such pathological problems as spasticity and dystonia. The continuing quantitative study of the contrasts between normal and disturbed motor systems provides a special perspective on how these important physiological mechanisms may work.

Nerve Sodium Channel. Dr. Richard A. Levis is interested in understanding the molecular mechanisms underlying gating of the voltage-

dependent sodium channel. He has selected the squid giant axon for the majority of this work and conducts experiments from May to September of each year at the Marine Biological Laboratory in Woods Hole, Massachusetts. During this period, many experiments are conducted in collaboration with Dr. F. Bezanilla, of the University of California, Los Angeles. The giant axon is ideally suited for these studies since it is the only preparation in which all of the electrical expressions of Na channel gating can be routinely measured; i.e., mean (macroscopic), ionic and gating currents, ionic current fluctuations ("channel noise"), and single channel currents. It is hoped that the intrinsic current fluctuations associated with gating charge movement ("gating current noise") will also become measurable in the near future; such measurements will be difficult in squid giant axon but are clearly impossible in any other preparation. The unifying rationale behind these experiments is that, with certain widely held assumptions, the equations describing these phenomena have the same overall rates (eigenvalues), but the relative weighting of the components are, in general, different in each situation. Knowledge of the relative weights in each expression of channel gating will provide valuable information about the underlying kinetics. Dr. Levis has developed an ultra-low noise axial wire voltage clamp system (with noise about 40 fold less than in "traditional" axon clamps) for measurement from large populations (on order of 10^9) of channels. This system provides excellent resolution for macroscopic ionic and gating currents and is also ideally suited for measurements of channel noise to frequencies in excess of 100 kHz. Patch clamp measurements of single sodium channel currents have recently been shown to be routinely possible in the cut-open giant axon. Dr. Levis' recent work has emphasized single channel measurements following the removal of fast inactivation of pronase. These studies are valuable in their own right, but, due to the small size of the currents through single sodium channels have, to date, been restricted to bandwidths of not more than 5kHz even with state-of-the-art electronics and signal detection algorithms. New techniques may extend this limit to 10 kHz, but this is still not sufficient to resolve the fastest aspects of squid axon sodium channel gating. However, the parallel use of single channel measurements and fluctuation measurements from large populations of channels (which can be extended to far higher frequencies) will overcome many of the shortcomings that are inherent to each technique individually.

Dr. Levis also has a continuing interest in extending the limits of resolution of single channels measurements. These efforts have proceeded on three fronts: 1) reducing the noise properties and in increasing the bandwidth of patch clamp electronics, 2) investigating the noise properties of various holder materials and of glasses used in the fabrication of patch pipettes, and 3) in collaboration with Drs. R. S. Eisenberg and A. Moghaddamjoo, development of improved signal detection algorithms. Many of the technical advances he has pioneered are now routinely used in numerous laboratories. A notable new development that will be tested during the summer of 1988 in a capacitive feedback patch clamp with noise less than one half that of present designs, reduced sensitivity to capacitive loads, and greatly extended bandwidths capabilities.

Computer based education. Drs. Joel Michael and Allen Rovick are continuing their development of a "smart tutor" for physiology teaching in collaboration with Dr. Marth Evens and a group of graduate students from the Computer Science Department, Illinois Institute of Technology.

An authoring/editing system is under development (Dr. Mohammed Haque, Northeastern Illinois University) with which rule-based programming in Prolog is facilitated. It allows ready modification of existing programs. This is an invaluable aid in the process of generating programs composed of complex tutoring rules. The first application to which this system has been applied is called the "The intelligent Physiology Tutor" (Dr. Haque), a program that coaches students solving cardiovascular pathophysiology problems.

In addition, a "smart tutor" to assist students learning to predict the behavior of the baroreceptor reflex is under development. The goal here is a full "smart tutor" that includes natural language capabilities (both understanding and text generation), student modeling, and a controller with a full armamentarium of tutoring tactics and strategies. All of these components are currently topics for on-going research by doctoral students at IIT.

Finally, research is underway aimed at understanding the processes by which student solve cardiovascular physiology problems and how expert (human) tutors assist students attempting such problems. Problem solving/tutoring sessions are being tape recorded, transcribed, and analyzed to determine what cognitive processes are employed by both student and tutor.

Excitation contraction coupling. The laboratory of Dr. Eduardo Rios has been studying excitation contraction (EC) coupling in skeletal muscle. This laboratory previously proposed that the particle in the t-tubule that performs the voltage-sensing in EC coupling is the dihydropyridine (DHP) receptor. In the past year they have pursued three aims. 1) to test the hypothesis that the voltage sensor of EC coupling is the DHP receptor 2) to understand quantitatively intramembrane charge movement and its relationship with EC coupling 3) to explore various alternative mechanisms of EC coupling.

In collaboration with Dr. Gonzalo Pizarro, Dr. Robert Fitts and Dr. Ismael Uribe, Dr. Rios has found additional evidence in favor of their central hypothesis that the DHP receptor is the voltage sensor and has further characterized the sensor. They demonstrated: 1) That the voltage sensor has specific requirements of extracellular metal cations in order to work. 2) That the cation selectivity of this effect is very similar to the binding affinity of intrapore sites of the L-type cardiac Ca channel, that is $\text{Ca} > \text{Sr} > \text{Mg} > \text{Ba}$; $\text{Ca} > > \text{Li} > \text{Na} > \text{Rb} > \text{Cs}$. 3) Another implication of the central hypothesis is that all drugs that bind to the dihydropyridine receptor must have EC coupling effects. This was tested using the Ca antagonists D-600 and (-) 202-791, and the pure agonist dihydropyridine (+) 202-791. Both D-600 and (-) 202-791 depressed charge movement and Ca release in a voltage-dependent way consistent with this proposal that these agents bind to inactivated states of the voltage sensor. Surprisingly, the agonist (+) 202-791 also had voltage-dependent inhibitory effects.

Results 1 to 3 are consistent with the hypothesis that the voltage sensors are the dihydropyridine receptors, (as first proposed in Brum and Rios, *Nature* 315: 417-420, 1987). Other laboratories have provided additional evidence in favor of the hypothesis, including the fact that DPRs are located in the functional T-membrane, that they are loosely associated with Ca release channels of the SR and that intramembranous particles of a size consistent with the ~ 400 kD of the DPR are seen at the junction, in close association with SR structures identified as channels.

The laboratory has developed a model for the different states of the voltage sensor. This model makes definite predictions about charge movement as divalent cation concentration is varied - predictions that have been experimentally verified.

The laboratory has proposed a novel mechanism for EC coupling. They envision that Ca channels in the SR are mechanically coupled to the DHP receptor of the t-tubules. When action potentials invade the t-tubule, the DHP receptor senses the voltage. This receptor undergoes a conformational change which causes the Ca-channels of the SR to open. The Ca that is released activates nearby Ca-activated Ca-channels that are also in the SR. This mechanism would explain the rapid and large release of Ca that occurs during contracture. They are testing this hypothesis by introducing Br₂ BAPTA, a faster Ca buffer, into the interior of muscle fibers and monitoring the intracellular Ca levels with optical measurements.

Finally, this year the observation and experience obtained in skeletal muscle were successfully applied to cardiac muscle. Working in collaboration with Dr. Bruce Dean, Harvard

University, intramembrane charge movements in single cardiac myocytes was measured for the first time. The work will have consequences for cardiac electrophysiology as well as the study of Ca channels, as the major portion of the charge movement appears to be related to Ca channel gating.

Visual Systems. In Dr., Roger Zimmerman's laboratory two projects are in progress. The first is a study of the development of identifiable neurons in an accessible region of the mammalian central nervous system, the retina of the cat. He has been concentrating on the differences in the time course of the cellular differentiation of neurons that are born on the same day. The other project is a physiological study of the neural circuitry of the adult retina, specifically the patterns in activity of retinal ganglion cells, and the structure of retinal ganglion cell receptive fields.



Division of Psychology

Philosophy

The Division of Psychology offers a program of study leading to a doctor of philosophy degree in psychology with specialization in health psychology. The goal of the program is to integrate basic knowledge of human behavior with specialized understanding of psychological issues related to health and illness.

Admission Requirements

In addition to the admission requirements established by The Graduate College, the division requires the results of the Graduate Record Examination (GRE) aptitude test and the advanced test in psychology. A personal interview may be requested. Completed applications should be submitted to The Graduate College by February 15.

Admission to the program is limited and competitive with students admitted only once each year in the fall term. Students from varied backgrounds whose career commitment is to health psychology are encouraged to apply. Although a background in psychology and the biological sciences is desirable, there are no specific requirements for admission regarding undergraduate preparation. Students who have graduate training may apply and, if admitted, their class standing will be determined on an individual basis.

Applicants will be evaluated on the basis of their academic record, letters of recommendation, their personal statements of career goals and aspirations, and their GRE scores. It is the responsibility of the Graduate Committee to review all applications and recommend acceptable candidates. The authority for admission to the program rests with the entire faculty of the graduate Division of Psychology, The Graduate College Council and the dean.

Curriculum

The curriculum is designed to provide a foundation in the science of psychology while permitting students the flexibility to pursue individual interests in health psychology. Completion of a core program in the basic theory and methods of psychology, with a concentration

in biological psychology and normative behavior is required. Depending upon their area of interest, students pursue advanced study and research leading to a dissertation in a specialized area in health psychology. Study in the biological sciences and other cognate areas relevant to the student's program is encouraged.

Course requirements for all students include the following:

General Psychology Core

- PSC 501 Psychology of Learning
- PSC 521 Biological Bases of Behavior
- PSC 522 Psychophysiology
- PSC 531 Developmental Psychology I:
Infancy through Adolescence
- PSC 532 Developmental Psychology II:
Adulthood and Aging
- PSC 541 Theories in Social Psychology
- PSC 545 Health and Illness Behavior
- PSC 557 Human Neuropsychology

Statistics

- PSC 505 Biostatistics I
- PSC 506 Biostatistics II
- PSC 507 Biostatistics III

Academic Policies

(Additional policies are listed in The Graduate College and in the Academic Information sections.)

The doctoral degree program in psychology requires a minimum of 144 hours beyond the bachelor's degree, equivalent to four years of academic preparation. Students are expected to maintain full-time enrollment during the academic year.

Comprehensive Examination. A written examination designed to assess the student's knowledge of general theory and methods of psychology will be taken after the first two years of satisfactory work is completed.

Dissertation. Following successful completion of the comprehensive examination, the student will begin work on a dissertation, according to the following agenda:

- selection of a dissertation committee in consultation with the major advisor
- development of an acceptable research dissertation proposal
- oral preliminary examination in reference to the rationale, methods and goals of the dissertation proposal
- admission to candidacy for the doctoral degree, contingent upon approval of the proposal by the student's dissertation committee
- completion of dissertation research
- oral defense of the dissertation

Research Activities

The Department of Psychology and Social Sciences is involved in a wide variety of both basic and applied research studies. Some of these are independent, and others are interdisciplinary, involving continuing collaboration with other scientists.

The neuropsychology group is carrying out a large program concerning the effects on behavior of various diseases of the central nervous system. Some of these studies are independent, but many are collaborative and involve members of the Departments of Neurological Sciences, Neurosurgery, Internal Medicine, and Psychiatry. These studies include: memory disorders and psychopathology in Huntington's disease; memory disorders, hallucinatory syndrome, and drug effects in Parkinson's disease; treatment effects in Tourette's syndrome; cognitive and motor function in dialysis encephalopathy, interictal behavior in epileptics; consequences of surgical control of epilepsy; lateralization of function in the cortex; behavioral sequelae of viral encephalitis; behavioral manifestations of myotonic dystrophy and memory disorders in Alzheimer-type dementia.

Research on individuals with cancer has focused on specific cancer populations and how psychological issues interface with medical care. Early detection procedures, such as breast self-examination to detect breast cancer and skin self-examination to detect melanoma in high-risk populations, have also been evaluated to increase compliance. Research is also being conducted in the area of life stress as this

pertains to adjustment factors for hospitalized elderly patients. Another study is concerned with development of a test to measure behavioral regression for hospitalized medical patients. A newly funded study is concerned with helping nurses stop smoking.

Evaluation of low back pain has been facilitated by development of several pain scales that rely on the language of pain for discrimination. It is now possible to identify patients with psychological disturbance among patients with varying degrees of organic involvement using a small number of affective and sensory pain descriptors. These pain descriptors are now being evaluated as they apply to the more complex, industrially injured patients to determine their usefulness in accurately categorizing subgroups.

Studies of sleep disorders and the relation of these to psychological, physiological and social functioning are another departmental focus. Behavioral treatments, both alone and in combination with surgical and/or pharmacological approaches, are being tested for control of sleep apnea in the Sleep Disorder Service. Sleep apnea is a potentially life-threatening disorder. One study has been testing a mechanical device for keeping the upper airway open during sleep in comparison with the efficacy of other treatments. Another approach developed and being tested in the laboratory is use of a sleep postural alarm to prevent sleeping in the supine position during which sleep apnea is more severe. The effect of this disorder, which involves nocturnal hypoxemia, on cognitive functioning is under study. A study using chronobiological principles to adjust nurses' shift schedules is also underway. A new study that compares the biological sleep markers and dream characteristics of males and females who are depressed to those of nondepressed controls will attempt to understand why women are more subject to depression than are men.

Social networks have emerged as a research focus on two projects. One is a study of reactions of families and social networks of patients to the situation of being a care giver to patients having neurological diseases (e.g., Alzheimer's disease, dystonia, Tourette's and Huntington's disease). Social networks are also the central concern in a study of adaptation to medical school by medical students. This is the first major attempt to quantify the changes that occur in the social networks of medical students throughout their four-year medical school experience.

New work has been undertaken in identifying dimensions of patient satisfaction with hospitalization. New strategies for data gathering have been devised which will permit researchers to isolate those particular areas of patient experiences that contribute most to satisfaction and dissatisfaction with inpatient care. Through a sophisticated data gathering system providing rapid feedback to the Medical Center, assessment of alterations of patient care protocols on satisfaction can be made.

In addition, two new research efforts have been developed in the area of health and social policy in collaboration with other departments in the Medical Center. The first is a study of the reduction of risk of cancer through dietary modification. This project has been developed in conjunction with the Department of Preventive Medicine. A second project links psychology and social sciences with health systems management in an effort to determine the impact of attitudinal variables on utilization of HMO services and ultimately on the costs of care attributable to excessive use of services.

Pediatric psychologists are conducting a number of research projects within the Department of Pediatrics. The neurodevelopmental sequelae of prematurity are being assessed in a number of ways. The study of high-risk infants includes measurements of spectral coherence (i.e., shared variability) of cardiac and respiratory rhythms in conjunction with motor and radiological assessments. Measurement of autonomic patterns in relation to site, size, and recovery from intracranial hemorrhage should permit predictions regarding long-term outcome. Similar measurements of asphyxiated infants have permitted accurate prediction of cerebral palsy before infants are discharged from the hospital. Follow-up assessments of autonomic function, auditory sensitivity, neuromotor, cognitive, language, and behavioral development are carried out through four years of age and repeatedly related to functional clusters of perinatal variables. Imbedded within this project are additional studies of autonomic correlates of apnea of prematurity, alternative measures of motor performance, early neuropsychological sequelae of neonatal brain hemorrhage or asphyxia and family stress factors related to quality of developmental outcome. Synthesis of the results should produce effective means of redefining risk status during infancy to reflect individual differences in extent of recovery from perinatal trauma and/or dysfunction.

Studies of attitudes toward weight and the stigma of obesity continue. Refinement and

standardization of the "Weight Attitude Questionnaire" is continuing through the collaborative work of investigators at this institution and Weber State College. The second of two studies is underway demonstrating that health care professionals (i.e., staff nurses) believe that obesity is caused by factors under the individual's self-control and that overweight people are less "likeable" than individuals with physical conditions thought to be caused by external factors.

Another area of investigation involves the development of measures that assess parent/child interaction to help predict probability of reabuse by parents. These potential interactional variables may have utility in making post-hospitalization placement decisions, especially for families with no history of prior abuse.

Patients admitted to the Pediatric Intensive Care Unit with a diagnosis of closed head injury are being evaluated in a battery of neuropsychological, intellectual, and academic measures. These are retested at 3, 6, 12, and 24 months post-trauma. Results of this ongoing evaluation will be employed to address two important questions: What is the natural recovery process of cognitive functions in children who have sustained a closed head injury? Can treatment administered shortly after the trauma predict the ultimate level of recovery of functions?

Patients admitted to the Adolescent/Young Adult Unit with a diagnosis of conversion disorder are being evaluated using a battery of psychosocial and medical measures. This sample will be compared to a matched group of patients with physiologically based symptoms. Findings will be used to construct a clinical scale for the diagnosis of conversion disorder.

The decision to breast or bottle feed their infants will be investigated in a racially mixed sample of new mothers. Expectant mothers will be interviewed during the ninth month of pregnancy and attitudes, socioeconomic factors, and demographic variables will be assessed. These mothers will then be contacted at one and six months postpartum to determine success in fulfilling their intention to breast or bottle feed.

Physical fitness in high school students before and after physical education and semesters without physical education is being assessed. Four standard measures of health-related physical fitness were administered to 150 male and female high school students before and after summer vacation, a semester of physical education, and a semester without physical education.

At the Johnston R. Bowman Health Center for the Elderly, research has been ongoing in the area of geriatric health psychology. Of continuing interest is the study of the efficacy of various brief psychological interventions with hospitalized elderly. Another study identifies and alters psychosocial and behavioral factors that contribute to the maintenance of physical illness and the defeat of medical management. A new project started this year focuses on influencing

and predicting treatment outcome of chronic illness and disability in elderly patients on the physical rehabilitation unit. Part of this project involves the development and psychometric refinement of measures of psychological functioning geared specifically for hospitalized elderly. Another aspect of this research explores the relation among stress, coping, social support, psychological symptomatology and chronic illness.



COURSE DESCRIPTIONS

Explanation of Course Descriptions

Discipline Abbreviations. Courses listed and described in this section are expected to be offered by the faculty of Rush University for the 1989-90 academic year. The courses are listed alphabetically according to the discipline to which the course content is most closely related. These disciplines do not necessarily reflect a department in the University or in the Medical Center. A three-character abbreviation for the discipline precedes the course number for each course listed.

Course Numbers. A three-digit course number follows the course abbreviation. It indicates the level of offering for that course as shown below:

<u>Course Numbers</u>	<u>Level of Offering</u>
300-399	Undergraduate Third Level
400-449	Undergraduate Fourth Level
450-499	Dual Level--may be taken for undergraduate or graduate credit
500-599	Graduate Level <i>for College of Nursing</i>
500-549	Master's Level
550-599	Doctor of Nursing Level
600	Post-Master's Level Residency or Thesis Supervision
601-699	Doctoral Level

Course Content. A course title is followed by a brief description of course content and information pertaining to the course:

Course Prerequisites. Specific prerequisites are noted for some courses. Where no prerequisite is listed, it is assumed that students

enrolling will have an adequate background on which to build. Students who have any questions about preparation should consult with the instructor of the course. If corequisite is listed, both courses must be taken during the same term.

Quarter in Which Course is Given. FA(II), WI(nte), SP(ring), or SU(mmer) designates the quarter in which the course is offered each year.

Course Credit. The number of quarter hours of credit for a course appears between parentheses. In many cases a series of three numbers is shown, e.g. (2-3-3). The first number refers to the hours per week of lecture or seminar; the second, to number of hours in laboratory or clinical setting; the third, to quarter hours of credit. If any of these is variable, it is replaced with "v".

Clock Hours (Rush Medical College). Clock hours appear between brackets. Since students in other colleges may cross-register for courses offered by Rush Medical College, the credit hour value of the course may also appear.

Clinical Weeks (Rush Medical College). The number of weeks that students normally take each clinical course is indicated. These weeks also appear on the academic record.

Instructor. When known, the instructor's name is provided.

Independent Study Courses. Students may enroll in an independent study course in any discipline of the University under the direction of the appropriate faculty member, with his/her written permission, and with the approval of the program director.

The course number 449 will be used for academic independent study for undergraduates and 599 for independent study for graduate students, with the appropriate discipline prefix.

ALTERNATIVE MEDICAL CURRICULUM

All alternative curriculum courses reflect the content of the regular medical curriculum for the first and second years. The format involves student-directed learning and group discussions. Only alternative curriculum students may take these courses.

ALT 451 Cellular/Molecular Biology. An integrated course with emphasis on the basic concepts and principles of biochemistry, immunology and microbiology interwoven with a study of their clinical applications. FA (v) Kaplan, Morley, Siegel.

ALT 452 Anatomical Sciences. The structure and function of the human body are examined from the perspective of the anatomical sciences, interwoven with a study of the clinical applications of gross anatomy, microscopic anatomy and embryology. WI (v) Dinsmore.

ALT 453 Physiology and an Introduction to Pharmacology. An integrated course that emphasizes the processes and phenomena of organ systems, and an introduction to the principles of pharmacology with a special emphasis on the autonomic nervous system, interwoven with a study of their clinical applications. SP (v) Michael, Nora, Prancan.

ALT 464, 465, 466 Behavioral Science I, II, III. An overview of the biological, psychological and sociocultural explanations of human behavior as they relate to health care. FA WI SP (v) Zitter.

ALT 471 Epidemiology. A general survey of biostatistics and epidemiology. FA (v) Olesky.

ALT 472, 473 Preventive Medicine I, II. Preventive medicine dealing with socioeconomic factors in health care, preventive practices and environmental and occupational health. WI SP (v) Staff.

ALT 511, 512, 513, 514 Introduction to Patient I, II, III, IV. Clinical concepts and skills. Students learn to elicit a medical history and do a general screening examination. Techniques are practiced on other students, simulated patients and patients. FA WI SP FA (v) Rothschild, Lofgren, Schwer, Hedberg, Kroger, Brown, Staff.

ALT 515, 516 Introduction to Patient V, VI. Continuation of ALT 514. WI SP (v) Charhogursky, Staff.

ALT 531 Neurosciences. The neurosciences, including neuroanatomy, neurophysiology, neuro-pathology, and neuropharmacology. FA (v) Bleck, Busch, Carvey.

ALT 532 Psychopathology. In depth study of psychopathology. WI (v) Bloom.

ALT 540 General Pathology. The general concepts of pathology are studied, with an introduction to degeneration, inflammation, immune response, neoplasia and metabolic and toxic pathological processes.

Seminars are accompanied by laboratory work in the microscopic anatomy of pathological changes. FA Loew.

ALT 541 Pathology, Pathophysiology, Pharmacology Block I. An integrated organ systems course with an emphasis on the concepts and principles of pathology, pathophysiology and pharmacology. Studies will include cardiovascular, locomotor, pulmonary and renal systems, immunology, infectious diseases and oncology. WI (v) Hedberg, Dampier, Nora, Loew.

ALT 542 Pathology, Pathophysiology, Pharmacology Block II. A continuation of ALT 541. Studies will include: hematology, endocrinology, reproductive system, genetics, gastrointestinal system and hepatology. In addition, there will be clinical trials and integration across all organ systems. SP (v) Hedberg, Dampier, Nora, Loew.

ANATOMY

ANA 451 Histology. The microscopic anatomy of cells, tissues and organ systems of the human body is studied through laboratories, lectures and self-instructional material. Fine structural specializations relating to tissue function are emphasized along with the histological architecture that characterizes each. FA (3-4-5) [82 hours] Dinsmore.

ANA 455 Neuroanatomy. The morphological organization of the central nervous system is explored through lectures, preceptorials, laboratory dissection and microscopic examination of the human brain and spinal cord. Functional and clinical correlations are emphasized. (5-4-6) Kerns.

ANA 462 Introduction to Neurobiology. The development, morphology and functional significance of the human nervous system are presented in lecture and by demonstrations. Fixed human brain preparations and series of neurological slides are used as visual aid materials. Prerequisite: courses in human biology or anatomy and physiology or comparative anatomy. Permission of instructor. FA (2-2-3)

ANA 465 Gross Anatomy. The structure and function of the human body are examined topographically through laboratory dissection, lectures and preceptorials. Laboratory examination is conducted regionally and clinical correlations are emphasized. SU (v-v-5)

ANA 471 Human Anatomy I. The structure and function of the human body are examined topographically through laboratory dissection, lectures and preceptorials. Laboratory dissection is conducted regionally, encompassing the thorax, abdomen, pelvis, perineum, head and neck, back and extremities. Radiological anatomy, living anatomy, and clinical correlations are emphasized.

Embryology. The fundamentals of human development are examined from gametogenesis and fertilization through the formation and differentiation of the germ layers, organogenesis and morphogenesis of the fetus. Congenital malformations and experimental embryology

Course Descriptions

are introduced where feasible. FA (5-6-7) [100 hours] Schmidt.

ANA 472 Human Anatomy II. Continuation of ANA 471. Embryology is introduced where pertinent. WI (5-6-7) [91 hours] Schmidt.

ANA 501 Supplement to Histology. Discussion groups for graduate students based on ANA 451. FA (v-v-v)

ANA 502 Supplement to Neuroanatomy. Discussion groups for graduate students based on ANA 455. (v-v-v)

ANA 503 Supplement to Human Anatomy I. Discussion groups for graduate students based on ANA 471. FA (v-v-v)

ANA 504 Supplement to Human Anatomy II. Discussion groups for graduate students based on ANA 472. WI (v-v-v)

ANA 505 Supplement to Embryology. This supplemental course for graduate students focuses on, but is not limited to, human embryonic and fetal development. Selected readings will be assigned in coordination with student interests and the embryology sections of ANA 471, 472. FA WI (v-v-2)

ANA 511 Comparative Cytology of Tissues. Cellular structure will be studied in relation to the organization of selected tissues. Emphasis includes application of special techniques, and the evolution of contemporary views on structure and function. Prerequisite: ANA 451. SP (3-0-3) Hughes.

ANA 513 Anatomy of the Eye. The histology and embryology of the eye will be reviewed in detail as the basis for discussion of selected topics. These will include congenital malformations, physiology and pharmacology of selected ocular systems; vessels and nerves of the orbit and regional structure and function. SP SU (3-0-3) Hughes.

ANA 521 Experimental Morphogenesis. Classical and contemporary studies of embryonic development and regeneration will be analyzed for common themes. With this foundation, students will be challenged to design experiments by which insight into differences and similarities between the paradigms may be further elucidated. Where feasible, the student may be invited to elaborate on the experiment as an independent laboratory research project. Prerequisite: ANA 451. (3-v-4) Dinsmore, Schmidt.

ANA 522 Tissue Repair Mechanisms. The ability of the several tissues of the vertebrate body to repair themselves is quite variable. The repair potential and mechanisms of each tissue will be considered separately, and in detail, through discussion of current journal articles. Prerequisite: ANA 451. (3-0-3) Dinsmore, Schmidt.

ANA 531 Anatomy of the Synovial Joint. The gross and microscopic anatomy of the synovial joint will be examined in detail as a basis for discussion of selected

topics. Topics will be arranged to meet individual student needs and may include physiology and biochemistry of articular cartilage, subchondral bone, synovial membrane and other associated structures. Permission of instructor. (v-v-v) Williams.

ANA 541 Topics in Muscle Biology. A seminar format will be employed for critical examination of papers relating to the biology of muscle in one of the following areas: current topics in excitation-contraction coupling, contractility and energetics; or review of the neuromuscular junction followed by examination of experimental systems dealing with the trophic maintenance and the development of muscle fiber types. Contributions of nerve injury to the pathogenesis of muscle disease will be considered. Permission of instructor. FA (3-0-3) Hughes, Kerns.

ANA 560 Topics in Neurobiology. A seminar format will be utilized to review selected topics and original papers within one of the following units of study: neurogenesis, plasticity, synaptic organization of neural systems or current methods in neuroanatomy research. SP (3-0-3) Durica, Hughes, Jacob, Kerns.

ANA 581 Approaches and Methods in Morphologic Research. Study of how sources of information, methods of investigation and technical procedures are applied to anatomic research. Demonstrations of techniques and student laboratory participation are included. SU (2-4-4) Staff.

ANA 591 Preceptorials in Anatomy. Laboratory experience is provided in conjunction with related preceptorials on selected topics in the anatomical sciences. Prerequisites: ANA 451, 472. SU (2-v-v) Staff.

ANA 592 Concepts in Morphology. Seminars and tutorials offered by faculty and guests on topics of special interest in the morphological sciences. FA WI SP SU (v-v-v)

ANA 595 Journal Club. (v-v-v)

ANA 599 Independent Study. Selected topics in anatomical science. (v)

ANA 600 Thesis Supervision. Supervision while student is writing the master's thesis following all required course work. Repeated until thesis is accepted for publishing. Student pays enrollment fee. No credit.

ANA 601 Surgical Anatomy. A laboratory program of regional dissections and demonstrations. The applied, clinical and surgical aspects of anatomical regions are emphasized. Prerequisites: ANA 471-2 or equivalent. FA WI SP SU (v-v-v) Doolas, Schmidt.

ANA 602 Advanced Anatomy. A laboratory program of special dissections and demonstrations on selected regions of the body: thorax, abdomen, pelvis and perineum, upper and lower extremities and the CNS (spinal cord and brain). Prerequisites: ANA 451, 472 or equivalent. FA WI SP SU (v-v-v) Schmidt.

ANA 699 Research. Research devoted to the preparation of a dissertation in partial fulfillment of the requirements of the degree program. FA WI SP SU (v-v) Staff.

BEHAVIORAL SCIENCE

BHV 451 Fundamentals of Behavior. During the first five weeks, a series of lectures provide the basic conceptual framework and terminology used to describe and explain human behavior in three areas: biological, psychological and sociocultural. Primary emphasis throughout is on the ways such types of influences affect the lives of patients. A matrix of special topic seminars (BHV 473) is presented during the second five weeks from which students select two. WI [40 hours] de Toledo-Morrell.

BHV 453 Behavior in the Life Cycle. Introduction to a clinically based study of the individual life cycle. Emphasis is on a normative account of development from physical, psychosocial and sociological perspectives. During the second five weeks of the quarter students choose one special topic seminar (BHV 473). SP [26 hours] Lopez.

BHV 473 Behavioral Science Minicourses. A matrix of special topic seminars which allows a concentrated introduction to a significant area of behavioral study. The following descriptions, presented in recent years, are typical of those presented each year. (1 or 2) [10 or 20 hours] de Toledo-Morrell.

Alternative Modes of Healing. Approaches to the facilitation of healing as practiced by such treatment modalities as osteopathy, chiropractic, spiritual healing, naprapathy and reflexology, as well as traditional branches of medicine. Presentations will be made by representatives of alternative modes of treatment.

Behavioral Change Strategies of Medical Practice. The application of the behavioral model of assessment and intervention to medical problems, including multiple strategies to increase compliance with medical regimes; techniques such as relaxation therapy, systematic desensitization, biofeedback, cognitive-behavior modification and stress management in a medical setting.

Death and Dying. Same as REL 464.

Family Assessment. The family systems approach is used to acquaint the student with the family as an object of study, assessment and treatment, including the assessment and treatment of mental and psychosomatic disorders.

Human Sexuality and Health Care. The sexual response in men and women, gender role development, taking a sex history in clinical practice, sex and medical illness and basic aspects of sex therapy in general practice are studied in an attempt to help the prospective physician provide better care to those patients who present themselves with sexual problems or in whom sexual difficulties are uncovered.

Neural Basis of Learning and Memory. Examination of experimental approaches used to study the neural basis of learning and memory. Included will be neurophysiological, biochemical, pharmacological and behavioral studies which will range from detailed analyses of simple behaviors in simple systems to complex learned behaviors in man.

Obesity. The epidemiology, genetics and social psychology of obesity, including the metabolic effects; factors influencing appetite regulation and behavioral, dietary and other approaches to treatment.

Pain. The symptoms of pain and its alleviation as a goal of treatment are studied along with the less obvious relationships to physical disease processes including pain as a complication of treatment.

Parenthood and Child Abuse. The basic emotional and practical issues of parenting and the circumstances under which parents come to abuse their children, with special attention given to why some parents abuse and how professionals can work with them.

Physician on Stage. Same as HUM 462.

Psychology and Psychopathology of Aging. The normal and psychopathological processes of aging and the physician's role in the total health care of the elderly patient. Topics include normal psychology; interviewing techniques; depression, paranoia and organic brain syndromes; psychological and pharmacological treatments and family issues regarding the elderly patient.

Psychology of Young and Middle Adulthood. A theoretical and empirical inquiry into the nature of adult development including psychodynamics of vocational choice, stability and change in personality, sex differences in adult development and criteria of maturity. Theorists to be studied include Kenniston, Erikson, Vaillant, Levinson and Gilligan.

Psychology, Psychiatry and the Law. An examination of some of the complex and controversial issues in the application of psychology and psychiatry to the law as well as the impact of mental health on the legal system, including treatment and evaluative issues; the role of attorneys in the mental health system; patients' rights and professional issues such as court testimony and malpractice.

Psychophysiology of Normal and Abnormal Infants. The close relationship between processes of biological and behavioral development during the first two years is explored in depth. Included are the study of behavioral milestones of normal infants; premature birth and perinatal anoxia and hypoxia; and the special problems of parenting sick or behaviorally abnormal infants. The range of deficiencies of high-risk or abnormal infants is contrasted with the behavioral patterns of mentally retarded and learning disabled children.

Sleep: Normal and Abnormal. A general introduction to the physiology and psychology of sleep, including both normal sleep and dream patterns and the deviations that occur with various medical and psychiatric problems.

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Also covered are the diagnosis and treatment of the insomnias, hypersomnias and abnormal behaviors associated with sleep.

Sociology of Substance Abuse. A definition of concepts that are necessary to an understanding of drug-related problems in American society and strategies for intervention and prevention programs. Emphasis will be placed on the sociological perspective vs. others that are used (i.e., pharmacological, psychological, medical, and legal).

Sociology of the Hospital. Topics include the organizational variables that influence the quality of patient care; the dilemma of providing clinical services in a bureaucratic system; how external groups exert social control over hospitals; the role of the patient and his/her family in the social structure of the hospital; recent developments and how social and organizational factors that relate to illness and patient care can be modified to increase the quality of care provided.

Stress and Illness. The history of research on stress in relation to health and illness is reviewed, and the evolution of the concept of stress to present day theories is traced. Hormonal parameters of stress, physiological indications of and responses to stress, cognitive responses to stress, coping mechanisms and life event relationships to illness are covered. In addition, the research linking stress to specific diseases and illnesses is discussed.

Work and Health. An examination of the epidemiologic distribution of work-related health problems, the organizational factors and their relation to occupational differences, and the current attempts at organizational changes that are aimed at lowering the level of such pressures.

BHV 520 Growth and Development in Children and Adolescents. An overview is presented of models and theories of development during childhood and adolescence. Biophysical, cognitive, emotional, and moral developmental theories are examined. Current research in the developmental and nursing literature is criticized for relevance to health promotion of children and adolescents. SU (3-0-3)

BHV 521 Adult Development. A critical examination of classic and contemporary theories of adult development is presented. SP SU (3-0-3)

BHV 522 Family Development Throughout the Lifespan. The development and evolution of families throughout the life cycle is presented. Research methods used to study family process are discussed. SP (3-0-3)

BHV 523 The Older Adult. Changing demographics of an aging population and major issues confronting aging persons are discussed. The impact of an aging society on social and health policy is explored. WI (3-0-3)

BHV 524 Human Sexuality Throughout the Lifespan. The development of human sexuality

throughout the lifespan is explored. The application of assessment and intervention models is presented. SP (3-0-3)

BHV 525 Crisis Theory and Intervention. Theoretical models and research related to crisis intervention in health care are discussed. SP SU (2-0-2)

BHV 526 Dynamics of Small Groups. Focus is on current theory and research on small group dynamics as a basis for interventions in groups with clinical, educational, or managerial tasks. WI (3-0-3)

BHV 527 Conducting Clinical Sociometric Explorations I. An introduction to the application of sociometric methods for identifying changing group dynamics using Morenean sociometric theory. FA (3-0-3)

BHV 528 Major Psychopathological Disorders: Theory, Treatment and Research. Major forms of mental illness and the management of behaviors related to mental illness is studied. SP (3-0-3)

BHV 529 Coping, Stress, and Adaptation to Illness and Disability. Major theories and concepts that explain how people learn to cope with stress, illness, and/or disability are examined. SU (3-0-3)

BHV 543 Observation and Communication. Introduction to the interview technique and process--the interview as a tool that facilitates the doctor-patient relationship and produces reliable and valid medical information. Interview theory, determinants of patient behavior and practice of interview skills are included. Seminars use videotapes. Prerequisite: BHV 451. WI [20 hours] Leavitt.

BIOCHEMISTRY

BCH 411, 412 Clinical Biochemistry I, II. Courses on the analytical and biochemical basis of methods used for chemical analysis of body fluids as related to diagnosis and treatment of disease. Topics discussed include blood sugar, carbohydrate tolerance tests, renal function tests, plasma electrolytes, blood gases, proteins, enzymes, liver function tests, cholesterol and lipids. Critical evaluation of methods is emphasized. (4-0-4) (4-0-4)

BCH 413 Clinical Chemistry III. These tests and topics are covered: chemical hematology, special proteins, vitamins, biogenic amines, elementary toxicology, thyroid function tests and steroid methods. Principles underlying automated and computer application methods will be discussed. Prerequisites: BCH 411, 412. (3-0-3)

BCH 471 Medical Biochemistry I. The chemistry and metabolism of biologically important compounds, amino acids, and proteins; nucleic acid and protein synthesis; bioenergetics; biochemical function of enzymes; common pathways of metabolism; and carbohydrate, lipid amino acid metabolism. Additional topics include integration of cellular metabolism; regulation of pH and electrolyte balance; regulation of whole body metabolism; muscle

biochemistry; biochemical nutrition and connective tissue biochemistry. FA (6) [53] Bezkorovainy.

BCH 472 Medical Biochemistry II. Continuation of BCH 471. WI (6) [61] Bezkorovainy.

BCH 475 Biochemistry Review. A review of content covered in Medical Biochemistry. Offered only in summer quarter. SU (4) Bezkorovainy

BCH 581 Biochemical Research Techniques for Graduate Students. (4) Staff.

BCH 585. Research in Industry. An 8-10 week (usually spring quarter) experience at an industrial research laboratory in Europe or the U.S. The student will focus on major and minor research areas. Assigned reading, a final examination and a written report are required. SP (5)

BCH 595 Seminar and Journal Club. Attendance at all seminars and completion of all journal article assignments are required of biochemistry students. (1)

BCH 624 Connective Tissue Biochemistry.

BCH 631 Supramolecular Biochemistry.

BCH 641 Carbohydrate and Lipid Metabolism.

BCH 645 Microbial Biochemistry.

BCH 690 Biochemistry Mini Courses. Mini courses covering a variety of specialized subjects topics. (1) Staff

BCH 699 Research in Biochemistry. (v)

CELL BIOLOGY

CEL 501 Cell Biology. Study of ultrastructure and function of the cell organelles. Structures covered include the nucleus, the plasma membrane organization and cell-to-cell communication. Also covered are the mitochondria, the endoplasmic reticulum, golgi apparatus and cell secretion and the cytoskeleton and molecular basis of motility. Alt. SP (2-0-2) B. Eisenberg.

CEL 522 Electron Microscopy Laboratory. Practical techniques of electron microscopy are addressed. Students dissect, fix and imbed tissue and learn the use of the electron microscope. The goal of the course is the preparation of electron micrographs of research quality. Extensive time for practical use of the equipment will be available. (0-8-4) B. Eisenberg.

CEL 531 Stereology. This course will present practical and theoretical approaches to measurement of anatomical structures. General principles of estimation of volume surface area and number will be covered by stereology and other techniques. Permission of instructor. (2-0-2) B. Eisenberg.

CEL 533 General Pathology. The general concepts of pathology are studied with an introduction of cell injury,

inflammation, immune response, metabolic and toxic pathological processes and neoplasia. The lectures and seminar groups are accompanied by laboratory work in the microscopic anatomy of pathological changes. Prerequisite: ANA 451 or permission of instructor. FA (3-4-5) Pauli.

CEL 571 Cell and Molecular Biology Techniques. This multidisciplinary course is open to students from all divisions. Practical methods used in modern research laboratories are demonstrated. Instructors active in these techniques use their own research facilities. Topics include tissue culture, light and electron microscopy, immunofluorescence, monoclonal antibody production, gel electrophoresis, cell fractionation, recombinant DNA technology, etc. Laboratories for inclusion depend on student interest and availability of faculty. Prerequisite: CEL 501 or permission of instructor. Alt. SP (1-3-2) B. Eisenberg and Staff.

CEL 599 Independent Study. (v-v-v)

CEL 612 Electron Microscopy. Practical techniques of electron microscopy are addressed. Students dissect, fix and imbed tissue and learn the use of the electron microscope. The goal of the course is the preparation of electron micrographs of research quality. Extensive time for practical use of the equipment will be available. [2 weeks] B. Eisenberg.

CLINICAL CONCEPTS AND SKILLS

CCS 501, 502, 503 Clinical Concepts and Skills I, II, III. A comprehensive introduction to clinical medicine utilizing the resources of the Medical Center and the Rush network hospitals. Studies are primarily tutorial, but texts, audiovisual and mechanical aids are available for self-study. Initially, students work with instructors and peers, learning to elicit a history and do a general screening examination. This is followed by extensive experience working with patients under the supervision of practicing physicians, with emphasis on eliciting historical information and gaining experience in physical examination techniques. Demonstration of pathological abnormalities and clinical pathological correlations are emphasized. Taught over three terms. [123 hours] McLaughlin, Vanderberg.

CCS 611 Computer Literacy. This medical computing elective includes an overview of computer system components, functions and environments; practice in microcomputer applications; computer and software selection and medical computing in the patient care system, office practice, clinical decisions, patient monitoring and medical research. Prerequisites: MED 601, SUR 601. [4 weeks, offered in April and September] Moore.

DERMATOLOGY

DRM 501 Introduction to Dermatology. Fundamentals of diagnosis and treatment of skin diseases. SP [8 hours] Pearson.

DRM 616 Dermatology. Dermatological problems are studied under the direct supervision of the departmental staff. Diseases are considered from the standpoint of etiology, pathogenesis, diagnosis, course, and treatment. Skin biopsy applications and techniques as well as histopathologic interpretation are emphasized. Skin therapeutics are taught, stressing biochemical and physiological considerations. Prerequisite: Fourth year status. FA WI SP SU [4 weeks] Pearson.

FAMILY PRACTICE

FAM 601 Core Clerkship in Family Practice. An intense ambulatory experience in family practice. Students see patients initially and formulate their assessments and plans under supervision of senior residents and attendings. Participation in comprehensive, longitudinal care is stressed. The common problems and responsibilities of a primary care physician are observed and taught. A lecture series and syllabus supplement the clinical experience. Two skills laboratories cover casting, suturing, and proctosigmoidoscopy. Diagnosis and treatment of alcoholism are also emphasized. Prerequisite: MED 503. FA WI SP SU [4 weeks] Vanderberg.

FAM 610 Family Practice Subinternship. An intensive primary care experience at either Christ or MacNeal Hospitals. The subintern will function in a capacity similar to an intern, with supervision by a senior resident and faculty physician. Prerequisite: FAM 601, MED 601, SUR 601. FA WI SP SU [4 weeks] Schwer.

FAM 621 Emergency Medicine--Christ Hospital. Students encounter a broad range of emergency problems in all areas of this large emergency service. The student will evaluate and manage patients under the direction of emergency medicine faculty and residents. Prerequisites: all core clerkships. FA WI SP SU [4 weeks] Feldman.

FAM 624 Inpatient Family Practice--West Suburban Hospital. Students work with attending family practice physicians who admit their patients to the West Suburban Hospital family practice teaching service, as well as with the second-year resident assigned to the service. Students will be responsible for comprehensive management of patients under guidance of the resident and attending physicians. Prerequisites: FAM 601, MED 601. FA WI SP SU [4 weeks] McCoy.

FAM 625 Alcoholism Chemical Dependency Unit. Students develop skills in interviewing and managing alcoholic and other chemically dependent patients. A longitudinal interdisciplinary experience is stressed, emphasizing detoxification, rehabilitation, and outpatient treatment. Prerequisite: FAM 601. FA WI SP SU [2-4 weeks] Sherin, Wainer.

FAM 631. Stress and Illness in an Ambulatory Setting. This is a preceptorship with an experienced clinical psychologist at the Christ Hospital Family Practice Center, seeing patients referred by the residents and

faculty of the Center. Clinical problems encountered include stress management, depression, eating disorders, and family counseling. FA WI SP SU [2 weeks] Zitter.

FAM 641 Urban Primary Care. A preceptorship with two family physicians in an urban practice, emphasizing preventive health care and the impact of environmental factors upon health care delivery. Prerequisite: FAM 601, MED 601. FA WI SP SU [4 weeks] Rothschild.

FAM 642 Community Medicine--Stickney Clinic. A broad-based ambulatory care preceptorship in a community-funded health clinic, serving the primary care needs of southwest suburban Stickney Township. Prerequisite: FAM 601. FA WI SP SU [4 weeks] Largosa.

FAM 643 ANCHOR Primary Care Preceptorship. A preceptorship with a family physician in practice in a prepaid group medical practice (health maintenance organization). Emphasis will be upon preventive, comprehensive health care and upon understanding unique aspects of voluntary prepaid health care. Prerequisite: FAM 601, MED 601, PED 601. FA WI SP SU [4 weeks] Noureldin.

FAM 644 Preceptorship in Wholistic Health Care Center. The student will work with a health care team comprised of a family physician, nurse and pastoral counselor. There will be participation in the health care of patients, encompassing medical, psychological and spiritual issues. There is a particular emphasis upon wellness promotion and comprehensive health planning. Prerequisite: FAM 601, MED 601, OBG 601, PED 601. FA WI SP SU [4 weeks] Humowiecki.

FAM 645 Suburban Private Practice--Oak Lawn. A preceptorship with an experienced family physician, both at his office in southwest Chicago and at Christ Hospital. The student will work in all areas of this busy physician's practice. Prerequisite: FAM 601, MED 601, PED 601. FA WI SP SU [4 weeks] Daum, O'Neill, Shobris.

FAM 651 Rural Primary Care--Streator. A preceptorship with an experienced family physician in Streator, Illinois, a town of 15,000 persons 90 miles southwest of Chicago. Prerequisites: FAM 601, MED 601, OBG 601, PED 601. FA WI SP SU [4 weeks] Gottemoller.

FAM 652 Rural Primary Care--Galesburg. A preceptorship with an experienced family physician in the small town of Galesburg, Illinois. Emphasis will be upon the practice of primary care in a rural setting, including use of both local and remote consultative services and community involvement of the physician. Prerequisites: FAM 601, MED 601, OBG 601, PED 601. FA WI SP SU [4 weeks] Currie.

FAM 653 Primary Care--College Health Service. A preceptorship at the Illinois State University Health Service, emphasizing the medical and psychological problems and health care needs of young adults. Prerequisites: FAM 601, MED 601. FA WI SP SU [4 weeks] Kingston.

FAM 671 Sports Medicine. An opportunity for in depth exposure to the preparticipation examination and care of the athlete. Students will work well fortified in the disciplines of family practice and orthopedics. Prerequisites: FAM 601, prior orthopedics experience preferred. FA WI SP SU [2-4 weeks] Davison.

HEALTH CARE EDUCATION

HCE 454 Development of Instructional Media. An overview of communication theory and its relationship to the communication process is used by students to design an instructional media program for a specific target audience. (2-0-2) Block.

HCE 501 Introduction to Teaching and Teaching Strategies. This course is designed to provide essential background of teaching including philosophy, learning theory, learning domains and cognitive style. (2-0-2)

HCE 503 Introduction to Evaluation Approaches and Testing and Measurement. This course is designed to present general evaluation models. Test item construction and clinical performance evaluation will be included. (2-0-2)

HCE 522 Production of a Media Presentation. Under the guidance of biomedical communications staff, the student will coordinate and perform all activities relating to the production of a media presentation. The student is expected to use the finished product to provide information or instruction for a specific target audience. (2) Block.

HCE 525 Professional Communication. The student will explore the purpose, function and application of specified communication techniques to health care settings and will demonstrate skill in their use in practice situations. (3-0-3)

HCE 531 Curriculum Design and Development. Curriculum design, organization, development and trends will be the content of this course. FA SU (2-0-2)

HCE 533 Introduction to Instructional Design in the Health Sciences. The student will develop a basic understanding of the learning process by preparing a teaching unit in a content area of choice for a specified group of learners; by relating selected principles of learning to adults; and by evaluating teaching effectiveness. (3-0-3)

HCE 541 Administration of Nursing Education. An overview of selected topics covering trends and issues, principles, concepts and theories of administration; key components of nursing educational administration and preparation for administrative leadership will be presented. FA (2-0-2)

HCE 581 Introduction to Research. The student develops skill in critically analyzing research studies, formulating research problems, designing research methods, using descriptive and inferential statistics to interpret data, analyzing data using parametric and

nonparametric statistical models and developing beginning competencies in the use of computers in research. (3-3-4)

HCE 595 Teaching Practicum. Students will assist a clinical teacher in teaching undergraduate nursing students during a field experience. Prerequisite: HCE 501 or 503. WI SP (2-6-4)

HEALTH AND SOCIETY

H&S 361 Issues in Holistic Health. This course focuses on current concepts and practices in the holistic health movement. It includes the historical development of holistic health philosophies and an overview of alternative methods/techniques/practices of health care, self-care management, ethnic/cultural influences and consumer education. The health care provider's role in assisting the client to integrate both holistic and conventional health practices is emphasized. (2-0-2)

H&S 461 Culture, Race, Poverty and Health Care. Seminar and discussion on the influence of race, values, stereotypes, and poverty on health care delivery. (2-0-2)

HEALTH SYSTEMS MANAGEMENT

NOTE: Faculty from several programs at Rush offer HSM courses. Some HSM courses are limited or directed to students in specific programs. Additional information regarding enrollment restrictions is available in the quarterly timetable of courses.

MTK 402 Health Care Management. Organizational design and managerial processes of planning, organizing, directing and controlling, as well as the dynamics of managerial jobs are studied. Emphasis is on management strategies and techniques in the area of health care delivery. (3-0-3)

HSM 502 Health Care Organization I. This course is intended to provide students with a learning structure that enables them to become reasonably well versed in the factors, forces and dynamics of both the macro and micro environments in which various health care institutions operate. The interrelationships among various trends and forces likely to shape the roles and responsibilities of health care institutions in future years will be stressed. (4-0-4) Lerner.

HSM 503 Health Care Organization II. This course is designed to provide students with a comprehensive working knowledge of the institutional perspective of health services management and dynamics of the health financing, policy and system performance arenas in which various health care institutions operate. Students will become familiar with key provider groups, the organization of financing, health information sources, health policy and regulation, quality assessment/assurance and system performance issues. (1-0-1) Lerner.

HSM 506 Medical Sociology. An examination of the

sociological, psychological, and behavioral dynamics of practitioners and patients within the health care delivery system. (3-0-3) Counte, Volek.

HSM 507 Epidemiology. An understanding of the principles and methodologies of epidemiology, research design and program evaluation emphasizing application to the planning and management of health care services. (4-0-4) Oleske.

HSM 515 Human Resources Management I. An understanding of the human relations skills required of the health systems manager in an environment filled with both federal and state legal constraints. Skills acquired include motivating employees, appraising performance, dealing with disciplinary problems and employee counseling. (4-0-4) Hill.

HSM 516 Human Resources Management II. Examination of the labor-management relationship including the employment and labor laws impacting on both the union and nonunion work force. Provides an understanding of unions prevalent in health care, strategies in confronting an organizing campaign, processes of collective bargaining and effective contract administration. SP SU (3-0-3) Hitt, Perret.

HSM 522 Multi-Institutional Arrangements. An analysis of the goals and organizational structures of multihospital systems and an understanding of causes for this trend, barriers to development, advantages/disadvantages and future trends. (3-0-3) Miller, Bass.

HSM 531 Finance I. Understanding the concepts and principles of accounting and finances and their application in health systems management. (4-0-4) Gasbarra.

HSM 532 Finance II. Provides an understanding and knowledge of health care services' payment policies, including sources of payment (e.g., Medicare, Medicaid, Blue Cross), emerging payment arrangements (e.g., DRGs, PPOs, HMOs) and the application of budgeting principles to health care institutions. (3-0-3) Jendro.

HSM 533 Health Economics. Application of economic tools and theories to the delivery of health care services. (4-0-4) Kaatz, Glandon.

HSM 534 Applied Economics I: Economics of Technology. This course will present the basic theory of technology evaluation as applied to the health care system. It will present and summarize the techniques developed in prior courses and analyze applications to medical and managerial technologies in health care. (3-0-3) Glandon.

HSM 535 Applied Economics II: Regulation and Public Policy. The current theories and empirical tests of the effects of regulation in the health care system will be presented and analyzed. Applications will focus on the influence of regulation on health services management with special emphasis on future regulatory actions and their impacts. (3-0-3) Kaatz.

HSM 536 Corporate Finance. Provides the financial tools and ability to understand the principle issues of corporate finance and financial management. The course shifts the students' focus from a micro to macro, or corporate, view of financial management. The overall objectives of the course are to understand the roles, functions and responsibilities of financial officers in managing a health care institution; be able to identify and analyze corporate finance problems and issues in the management of health care institutions and be able to evaluate the financial performance of institutions in asset and debt management. (4-0-4) Kovel.

HSM 539 Finance Seminar. The application of knowledge and skills acquired in the HSM finance course and the integration of decision-making processes. Students make strategic planning, staffing, capital financing, pricing and cash management decisions for a hospital under changing environmental trends and payment policies. These decisions will affect the hospital's financial position relative to other hospitals in the community through a computer simulation model. (3-0-3) Necas, Cirone.

HSM 543 Health Law. Provides a systematic and comprehensive knowledge of law as it impacts health care delivery systems. Students acquire an understanding of contract law, tort law, corporate law, labor law and civil procedure. (4-0-4) Brown.

HSM 545 Organizational Analysis. An introduction to the study of organizations, including structures, processes and human behavior. This course focuses on theories and concepts in such areas as organizational research, motivation, stress, leadership, group dynamics, roles, decision making, technology, communication, ethics and change. (3-0-3) Trufant.

HSM 546 Advanced Organizational Analysis. The student will examine several comprehensive theories of organization and environment and extract from them practical management tools that can be applied to any management setting. Topics covered are: Structure and Technology; Culture and Innovation; Environment and Strategic Choice. (4-0-4) Counte, Short.

HSM 551 Information Systems I. Basic information systems concepts are presented such as: systems theory, systems analysis, fundamental information systems concepts (in the areas of hardware, software, and personnel), fundamentals of information systems management and the systems life cycle. (4-0-4) Serxner, Odwazny.

HSM 552 Information Systems II. This course will concentrate on intermediate to advanced concepts of information systems. Specific topics may include: information systems resource management, cost/benefit analysis, overview of information system topology, technology assessment and strategic planning. (4-0-4) Jaworski.

HSM 553 Advanced Information Systems. Advanced topics and concepts of information systems concentrating on specific application within health care including administrative, financial, clinical, and

departmental. (3-0-3).

HSM 555 Health Care and the Elderly. This course gives students an understanding of the demographics of the elderly population, the aging process and the impact of legislation on development of a long-term care system will be the basis for the building of a model care system for the elderly. Social policy issues in the United States and other western countries will be addressed by health care providers as well as by the elderly and their families. (3-0-3).

HSM 557 Quality Assurance in Health Care. This course will provide the student with a comprehensive overview of the major components of a quality assurance program in various health care delivery settings, such as hospitals, mental health centers, HMOs and ambulatory care and long-term care institutions. (3-0-3) Terman.

HSM 558 Ambulatory Care. An overview of ambulatory health systems, marketing and management techniques, and professional and administrative issues. (3-0-3) Kempinski, Bliss.

HSM 560 Health Care Policy: Formulation, Implementation and Evaluation. The topics covered will be health policy as part of the environment for providers, processes by which providers can influence policy formation, some methods of policy analyses, and pertinent recent history and relevant trends. (3-0-3) Shannon.

HSM 561 Strategic Planning. This course will provide an understanding and knowledge of strategic planning and budgeting for health care institutions. Approaches to developing strategic and operational plans will be explored. The basic accounting concepts learned in Finance I will be translated into specific financial applications and management decisions via the budgeting process. (3-0-3) Holloman.

HSM 562 Marketing Management. An understanding and working knowledge of marketing theory, terminology, techniques and analytical approaches for marketing health services. (4-0-4) Newman, Carollo.

HSM 571 Operations Management. Fundamental operations research and industrial engineering topics as applied to health care are presented. Topics might include: project management, productivity, queueing theory, and inventory theory. (4-0-4) Riehs.

HSM 572 Advanced Operations Research. The focus of this course is on the solution of management and operational problems presenting themselves in the health care delivery setting through the use of advanced quantitative techniques. Emphasis will be placed on the theory behind some of the advanced techniques developed in HSM 571. (3-0-3) Wellman.

HSM 576 Values and Power: Ethics for Health Care Managers. Same as REL 576. (3-0-3)

HSM 582 Intermediate statistics. This course reviews a blend of pre-, true and quasi-experimental designs as well as intermediate level statistical tests which a health

systems manager will likely use operationally or in empirical research. The statistical tests include ANOVA, simple and multiple regression, and such nonparametric techniques as the Kolmogorov-Smirnov, Wilcoxon, and Mann-Whitney. Knowledge of probability theory and univariate statistics as well as hands-on DOS and SPSS-PC+ computer skills, is presumed. Given a data set and articles for review, participants will design and implement a research plan, interpreting and subsequently writing their results in a journal article format. (4-0-4) Mon.

HSM 583 Advanced Statistics. Emphasis on these advanced topics and concepts in statistics will be placed upon research methods and forecasting. (3-0-3) Thompson.

HSM 595 Graduate Seminar. An analysis of selected topics and issues in contemporary health care with the broad participation of faculty and eminent leaders in the field. (1-0-1) Sinions, Glandon.

HSM 597 Graduate Project. A two-quarter course that provides the second-year HSM student with the opportunity to apply problem-solving techniques and evaluation methods. The student conducts an applied management study at a Chicago-area health care organization. Major emphasis is placed on developing students' report writing and oral presentation skills. (8-0-8) Oleske.

HEMATOLOGY

HEM 301 Hematology I. Study of normal hematopoiesis, including development, metabolism, kinetics, and function of red cells, white cells, and platelets and an introduction to the various associated hematologic disorders. Fundamentals of hemostasis, including coagulation pathways and laboratory procedures that evaluate these mechanisms, are covered. Includes laboratory experiences dealing with basic routine tests performed in a clinical hematology laboratory, such as simple automated cell counting, blood smear morphology and reticulocyte counts. (3-6-5)

HEM 302 Clinical Hemeostasis. (2)

HEM 425 Hematology II. Review of normal hematopoiesis and an in-depth study of erythrocyte disorders, their etiologies, pathophysiology, clinical features and significant laboratory findings. Prerequisite: HEM 301. (2-0-2)

HEM 426 Hematology III. Continuation of HEM 425 with an in-depth study of leukocyte and coagulation disorders that covers etiology, clinical features and significant laboratory findings. Prerequisite: HEM 425. (2-0-2)

HUMANITIES

HUM 461 Physician as Writer. An exploration of selected fiction, chronicles and autobiographies by

distinguished twentieth century physician-writers (including William C. Williams, Chekhov, and Azuela). Focus will be on writers' unique responses to questions of medical ethics, involvement in social issues and doctor-patient relationships, as well as on physicians as philosophers and humorists. (2-0-2) Vidaver-Cohen, Cohen.

HUM 462 Physician on Stage. A stimulating new look at the physician--clinician and scientist--as major character in distinguished nineteenth and twentieth century drama. The plays focus on the physician's self-image; encounters with moral dilemmas; interactions with patients, colleagues and society and on specific medical disorders. Includes works by Peter Shaffer, Tennessee Williams, Eugene O'Neill, Henrik Ibsen and Frederic Durrenmatt. (2-0-2) Vidaver-Cohen, Cohen.

HUM 463 Disease as Subject in Contemporary Literature. An examination of the depiction of disease in outstanding fiction and poetry as well as in memoirs, journals and personal narrations of some distinguished contemporary writers who faced disease and analyzed their experiences with acute perception. Works by Albert Camus, Andre Gide, Eleanor Clark, John Updike, Thomas Mann, John Berryman and Katherine Anne Porter will be considered. (2-0-2) Vidaver-Cohen, Cohen.

HUM 464 Benjamin Rush and Sigmund Freud: Biography and Autobiography. Elective seminar focusing on the lives of Drs. Freud and Rush through a close look at letters, writings and autobiographical statements. In discussion and lecture the class will construct from these autobiographical materials the beginning of biographical statements and will consider the method and purpose of biography. (2-0-2) Catchpole.

IMMUNOLOGY

IMM 301 Basic Immunology. An introduction to the basic concepts and terminology of immunity including development, structure and function of the lymphoid systems; the basis of antigenicity; antibody structure; methods of detection and measurement; mechanism of cellular immunity; white cell function; hypersensitivity reactions; the complement system and mechanisms of immune suppression and tolerance. Methods of laboratory evaluation of humoral and cellular immunity are introduced. (3-0-3)

IMM 402 Clinical Immunology. Study of clinical and applied immunology as it relates to the role of the immune response in production of disease; primary and secondary immunodeficiency, atopy and other forms of hypersensitivity, autoimmunity, transplantation and tumor immunity. The use of immunology as a diagnostic, prognostic and therapeutic aid is studied. Prerequisite: IMM 301. (2-0-2)

IMM 403 Clinical Serology. Students will learn to apply the fundamental concepts of antigen-antibody interactions to routinely performed assays of syphilis and nonsyphilis serology. Laboratory sessions cover proficiency in performance and familiarity with purpose, principles and interpretations of the following tests: RPR,

CSF-VDRL, TPA, FTA-ABS, Monospot, Monotest, Heterophile, ASO, AHT, ANTI-DNAase B, RF Latex, RF SCAT, Anti-Thyroglobulin and Anti-Microsomal. Prerequisite: IMM 301. (2-6-5)

IMM 431 Immunohematology. Blood group antigens and antibodies from the discoveries of Landsteiner in 1900 to the present day are studied. Blood banking procedures involved in drawing, testing, storing and transfusing whole blood and its components are discussed. The laboratory section will deal with the basic blood bank procedures, including ABO grouping, RH typing, compatibility testing and special antibody studies. Prerequisite: IMM 301. (3-6-5)

IMM 501 Immunology. An introduction to medical immunology with emphasis on basic concepts and principles, interwoven with a study of their clinical applications. SP (5) [54 hours] Lint.

IMM 502 Introduction to Experimental Immunology. A graduate introductory course covering basic concepts in experimental immunology including basic laboratory techniques. FA (3-2-4) Lint.

IMM 521 Basic and Clinical Immunology. A comprehensive introduction to immunology with emphasis on basic concepts and principles and on clinical applications. SP (5-0-5) Lint.

IMM 531 Cellular Immunology. A comprehensive course in cellular immunology, including lymphocyte ontogeny, cellular interactions, effector cell functions, immunogenetics and tumor immunology. Alt. WI (5-0-5) Gebel.

IMM 542 Biology of Membranes. A comprehensive examination of the physical, chemical, biochemical and immunological forces that contribute to the structure and function of membranes. Concepts include receptors and transmembrane signalling. Alt. SP (4-0-4) Bremer.

IMM 543 Molecular Immunology. A comprehensive examination of immunoglobulins and antigens with special emphasis on how structure relates to immune function and on the molecular basis of antibody diversity and complement reactivities. Alt. WI (4-0-4) Potempa.

IMM 555 Inflammation. A detailed examination of IgE structure and regulation mechanisms of histamine release from human cells and allergens and allergic phenomena, including the mechanisms in the inflammatory response and the interrelationships between the coagulation, fibrinolytic, and kinin systems. Alt. SP (4-0-4) Thomas.

IMM 556 Host Defense. Immunological aspects of host defense against microorganisms. Concepts will include the structure and function of the complement system, phagocytic cell function and nonspecific barriers to infection. Alt. SP (4-0-4) Lint.

IMM 561 Clinical Immunology. A review of critical topics in clinical immunology from the clinical and pathological viewpoints. Alt. SP (4-0-4) Landay, Lusk.

IMM 571 Laboratory Tutorial. Individual program designed to acquaint the student with research protocols and interests within the department. (v-v-v) Staff.

IMM 590 Special Topics. Detailed independent study of selected contemporary topics in immunology. (v-v-v) Staff.

IMM 598 Predissertation Research. Research credits prior to acceptance to doctoral candidacy. (0-v-v) Advisor.

IMM 599 Independent Study. Specialized course work designed around the needs of an individual student. (v-v-v) Staff.

IMM 699 Dissertation Research. Research credits after admission to candidacy. (v-v-v) Advisor

INTERNAL MEDICINE

MED 501, 502, 503 Clinical Pathophysiology I, II, III. Serving as a bridge between the basic sciences and clinical medicine the course helps to make the student conversant with the limits of biochemical and physiologic responses under a variety of stresses and disease states. Emphasis is in three basic areas: abnormal, general cellular biology, homeostasis and organ system pathophysiology. The course closely coordinates with topics in the pathology course and also with didactic material to be presented during the third-year clinical program. FA WI SP [215 hours] Szidon.

MED 601 Core Clerkship in Internal Medicine. The medicine clerkship is designed to introduce students to the study and skills of clinical medicine. The case study approach is used in evaluation and management of patients and their problems so that students can develop their skills in history taking and differential diagnosis, as well as development of therapeutic regimens. By caring for patients students develop an understanding of relationships between disease states and patient hosts from the medical, social, and emotional points of view. The ward team approach allows students the opportunity to work toward the goals of good patient care and the acquisition of a solid foundation of medical knowledge. In order to ensure a broad experience in internal medicine, students are expected to supplement their learning through a self-study program of learning objectives. Prerequisite: CCS 502. FA WI SP SU [12 weeks] Rosen.

MED 605 Geriatric Medicine. An introduction to geriatric internal medicine including the identification of the problems seen most commonly in geriatric patients and the gaining of insight into the approach and management of these problems. Topics covered are drug effects and interaction in the elderly; organic brain syndrome; approach to rehabilitation of the stroke patient; problems encountered in nursing home patients; urinary incontinence and osteoporosis and its consequences. Prerequisite: MED 601. FA WI SP SU [4 weeks] Salzman.

MED 606 Critical Care Medicine. The medical student will function as an "extern" under the direction of an upper level medical resident and teaching faculty. The student will admit, manage, and discharge patients. This includes procedures (within their capabilities), history and physicals, daily notes, and transfer notes. The objective of the clerkship is to provide the knowledge and skills needed to ethically assess and manage critically ill patients in need of critical care monitoring. Prerequisite: MED 601, SUR 601 and three other core clerkships. FA WI SP SU [4 weeks] Davila.

MED 610 Internal Medicine Subinternship. Students function at an advanced level, doing histories and physical examinations, diagnostic evaluations, and initiation of appropriate therapy. There is close supervision by the staff of the Department of Internal Medicine. The course is primarily intended for students desiring additional clinical experience in internal medicine. Prerequisite: MED 601, SUR 601. FA WI SP [4 weeks] Rosen.

MED 611 Clinical Cardiovascular Medicine. Includes the study of the diagnostic spectrum of cardiac evaluation: bedside assessment, electro-cardiography, electrophysiology, echocardiography, cardiac catheterization, coronary angiography, interventional cardiology, preventive cardiology, and exercise testing. At network hospitals, experience in bedside diagnostic and non-invasive evaluation is emphasized. Prerequisite: MED 601. FA WI SP SU [4 weeks] Liebson.

MED 612 Medical Intensive Care Unit. Experience in the recognition and management of medical emergencies, particularly the use of temporary pacemakers, bedside hemodynamic monitoring, use of respirators, and management of renal emergencies and cardiac arrhythmias. Prerequisite: MED 601. FA WI SP SU [4 weeks] Balk.

MED 613 Introduction to Cardiovascular Research. Student programs are individually planned with emphasis on understanding basic research techniques rather than on the accomplishment of a specific research project. Students participate in the research program of the Section of Cardiology, including projects in human hemodynamics, preventive cardiology, non-invasive studies, myocardial metabolism, cardiovascular electronics, and computer application. Prerequisite: MED 601. FA WI SP SU [4-8 weeks] Liebson.

MED 615 Emergency Medicine. Students will see patients in all areas of the emergency room under the supervision of attendings and residents. Emphasis will be on complaint-oriented history taking, with attention to pertinent PMH (past medical history), performance of a pertinent physical exam, recording the findings and discussion of the patient with the supervisor who may repeat some of the exam as necessary. Together they will formulate a diagnostic plan, bearing in mind time and cost factors and priorities inherent in various diagnostic possibilities. Prerequisites: MED 601, SUR 601. FA WI SP SU [4 weeks] Hanashiro.

MED 617 Echocardiography. Four weeks of clinical experience in the echocardiography laboratory. Echocardiography studies will be used to demonstrate pathophysiologic processes. M-mode 2D, pulsed continuous wave and real time Doppler Studies will be obtained. The student will be responsible for collection, evaluation of patients undergoing echocardiography. It is expected that 10 to 15 studies will be evaluated on a daily basis as well as participate in analysis of echocardiography data. Approval of course director and assistant dean for clinical curriculum. Prerequisite: MED 601. FA WI SP SU [4-8 weeks] Liebson.

MED 621 Clinical Endocrinology and Metabolism. Endocrine and metabolic disorders are studied under the direction of the clinical faculty. Regular departmental conferences and seminars supplement clinical work, which is primarily with hospitalized patients. Prerequisite: MED 601. FA WI SP SU [4 weeks] Bagdade

MED 626 Clinical Nephrology. The clinical diagnosis and management of patients with renal disease as well as various fluid, acid-base, and electrolyte abnormalities are studied. In addition, the course is directed toward the proper interpretation of pathophysiologic findings and the practical management of various disorders involving the excretory system and body fluids. Prerequisite: MED 601. FA WI SP SU [4 weeks] Lewis.

MED 632 Digestive Diseases. The disciplines of hepatology and gastroenterology are studied on rounds where students review material pertinent to patients they evaluate. In addition, four weekly conferences, including clinical pathology, a general topic conference with case presentations, and journal club cover a broad range of gastrointestinal procedures. Prerequisite: MED 601. FA WI SP SU [4 weeks] Schaffner.

MED 633 Gastrointestinal Preceptorship. Rounds are made five days a week with each morning spent observing endoscopic procedures and seeing new consultations. Afternoons may be spent either seeing new outpatients in the office or new consultations in the hospital. Follow-ups on consultations is done in late afternoon rounds. Supervised readings in gastroenterology, and medical grand rounds help prepare the student for weekly gastroenterology conferences where they may make presentations. Prerequisite: MED 601. FA WI SP SU [4 weeks] Franklin.

MED 636 Clinical Hematology. Regular review of case studies with the faculty provides the basis for in-depth study of clinical diagnostic hematology, particularly through study of bone marrows and other diagnostic facilities of the laboratory. Inpatients being followed or treated by hematology are studied in a comprehensive fashion. Clinical and laboratory data are integrated and therapeutic responses are evaluated. Prerequisite: MED 601. FA WI SP SU [4 weeks] Knospe.

MED 646 Clinical Infectious Disease. Students are expected to master basic principles of diagnosis and management of patients with infections. Appropriate use of diagnostic microbiology, differential diagnosis of febrile patients and appropriate selection of chemotherapeutic

agents are taught during case presentations on daily rounds and in a weekly lecture series. Prerequisite: MED 601. FA WI SP SU [4 weeks] Benson.

MED 651 Clinical Rheumatology. Emphasis is on fundamentals of joint examination, observation and performance of laboratory examinations on synovial fluid, and familiarity with the spectrum of laboratory procedures useful in rheumatologic diagnosis and treatment. The interdisciplinary approach relies heavily on contributions of immunology, orthopedics, diagnostic radiology, physiotherapy, and occupational therapy. Prerequisite: MED 601. FA WI SP SU [4 weeks] Schnitzer.

MED 661 Clinical Oncology. Patients seen by the Section of Medical Oncology provide an ample and varied spectrum of oncological problems. Various therapeutic approaches and complications occurring in the course of the disease are discussed. The program stresses the importance of the combined interdisciplinary approach, using the resources of the departments of surgery, therapeutic radiology, pathology and nuclear medicine. Students will have the opportunity to participate in the kidney programs of the Tumor Ward on 10 Kellogg. Prerequisite: MED 601. FA WI SP SU [4 weeks] Harris.

MED 671 Clinical Pulmonary Medicine. The management of patients with pulmonary disease provides the focus for study of clinical management, interpretation and use of pulmonary function and ventilatory studies and gas management. The essentials of pulmonary physiology are emphasized. Prerequisites: MED 601, SUR 601. FA WI SP SU [4 weeks] Rosen.

MED 677 Clinical Immunology/Allergy. Students work directly with house staff and inpatients, functioning as primary allergy/immunology consultants. Under the supervision of residents, fellows and attending staff, students formulate a diagnostic and treatment plan and make formal and informal teaching rounds on all allergy/immunology service in patients. Students learn to take an allergic history and the principles of managing classic allergic disease. Multiple teaching conferences are held, many of which are directed primarily to the medical students. Each student selects a topic and carries out research in order to make a seminar presentation. Prerequisite: MED 601. FA WI SP SU [4 weeks] Luskin.

MEDICAL PHYSICS

MPH 457 Radiation Safety of Radioactive Materials. This course reviews basic nuclear physics' and health physics' principles and practices, regulations and instrumentation for the safe use of radioactive material. SP (2-0-2) Chung-Bin, Majewski.

MPH 458 Radiation Physics Laboratory. A study of basic physics' principles and applications with laboratory exercises on techniques and instrumentation for nuclear radiation detection and measurement as they relate to nuclear physics and radiation safety of radioactive materials. Prerequisite: MPH 457. WI SP (1-3-2) Majewski.

MPH 460 Introduction to Radiation Safety and Diagnostic Radiological Physics. The course covers medical x-ray protection for energies up to 10 MeV, x-ray equipment design and use. FA (2-v-3) Chung-Bin.

MPH 461 Physics of Diagnostic Radiology. An intermediate course in physics for residents in diagnostic radiology. Topics will include CT and Ultrasound. Prerequisite: MPH 460. WI (3-0-3) Chung-Bin.

MPH 463 Physics of Magnetic Resonance Imaging. This course is a basic introduction to the physical principles of MRI, with emphasis on proton MRI. Topics covered will include fundamentals of magnetic resonance, relaxation times and the basis for imaging techniques. SP (2-0-2) Groch.

MPH 464 Concepts in Magnetic Resonance Imaging. A basic conceptual overview of magnetic resonance principles as applied to image formation is provided. Fundamental proton magnetic resonance concepts as well as basic imaging principles will be discussed on a level appropriate for medical residents in radiology. FA (1-0-1) Groch.

MPH 465 Computer Science Applied to Imaging. The objective of this course is to present the fundamentals of computer science to physicians whose specialty is in diagnostic imaging. SP (2-1-2) Chung-Bin, Staff.

MPH 466 Radiation Protection Using Fluoroscopic x-rays. This course is designed for fluoroscopic users other than radiologists. The course includes six series of lectures covering the basic radiation physics, fluoroscopy, radiation biology and radiation protection. WI (1-0-1) Kao, Hubbard.

MPH 471 Physics of Nuclear Medicine I. The course covers mathematics for nuclear medicine, nuclear reactions, decay schemes, half-life, decay series, interaction of radiation with matter and detectors used in nuclear medicine. Imaging instrumentation, including scintillation camera, emission tomography and application of the computer to nuclear medicine, is covered. WI (3-0-3) Groch.

MPH 475 A Workshop in Radiopharmaceutical Science. This course covers production of radionuclides, generators; formulation and Q.C. of tracers for 16 organ localization, in vitro and in vivo studies; dosimetry; FDA and safe handling. Compounding, biodistribution, and imaging will be studied in the laboratory. FA WI SP (1-0-1) Rayudu.

MPH 481 Introduction to Therapeutic Radiological Physics. The course covers basic physics, definition and measurement of dose, physical and clinical dosimetry and quality assurance. FA (3-0-3) Kartha.

MPH 482 Therapeutic Radiological Physics. The five "p's" of radiation therapy physics are examined: prescription, physical dose, planning, precision and

pattern of treatment outcome. Additionally, interactions of x-rays and gamma-rays; measurement of exposure, calibration of high-energy photon and electron beams and dose distributions for external-beam therapy are studied. Prerequisite: MPH 481. WI (3-0-3) Kartha.

MPH 483 Dosimetry Applied to Therapeutic Radiology. This course is designed for therapeutic radiology trainees, including residents, and is organized as a rotation in the Section of Medical Physics. The laboratory exercises consist of routine dosimetry computations in clinical radiotherapy. Prerequisite: MPH 481. SP (0-8-4) Kartha.

MPH 484 Brachytherapy Physics. This course is designed for residents in therapeutic radiology and graduate students. Topics include basic physics of radioactivity and use of radioactive isotopes in clinical radiotherapy. Prerequisite: MPH 482. SP (2-0-2) Kartha.

MPH 486 Introductory Hyperthermia. This course will cover the physical and biological mechanisms of hyperthermia as well as the commonly used methods for delivery of heat energy for cancer therapy. SP (2-0-2) Urbon.

MPH 488 Physics Applied to Dermatology. The course covers basic physics, interaction of radiation with matter, definition and measurement of dose for low-energy x-rays and megavoltage electrons which are used for dermatological treatment. WI (1-0-1) Lanzl.

MPH 490 Medical Radiological Physics Review. An intensive review course in all branches of medical radiological physics for preparation for the American Board of Radiology Certification Examination. Prerequisites: MPH 461, 471, 482. SP (3-0-3) Chung-Bin, Staff.

MPH 491 Introduction to Computers. The course covers basic components and a systematic presentation of building blocks of computer hardware and software for beginners. SP (2-2-3) Wachtor.

MPH 492 Therapeutic Radiology Physics Review. An intensive review course for therapeutic radiology residents and graduate students in medical physics in preparation for the American Board of Radiology Certification Examination. SU (2-0-2) Kartha.

MPH 501 Radiation Physics. This course provides a rigorous examination of the interaction with matter of high-energy particles: photons, electrons, neutrons and heavy-charged particles. FA (3-0-3) Hubbard, Jette.

MPH 502 Radiological Physics I. The course covers design and operation of accelerators; radiation quantities and units including stochastic and nonstochastic quantities; ion collection and recombination and dosimetry systems used in therapeutic radiology and radiobiology. Prerequisite: MPH 501. WI (4-0-4) Lanzl.

MPH 503 Radiological Physics II. Continuation of MPH 502. SP (4-0-4) Lanzl.

MPH 504 Topics in Radiation Dosimetry. The course covers track-etching phenomena, registration of fission fragments, alpha particles and recoil nuclei; wall-less detectors in microdosimetry; Katz and Kelleher-Rossi theories of particle tracks and thermo-photoluminescence. Prerequisite: MPH 502. SP (3-0-3) Lanzl, Rozenfeld.

MPH 505 Radiological Physics Laboratory. This is a practical course directed towards understanding of the instruments, apparatus and facilities used in applied radiation work. This course will include carrying out scientific evaluation and essay-type reporting. Prerequisite: MPH 502. FA WI SP (v-v-v) Jayaraman, Kao, Chung-Bin, Lanzl, Rozenfeld, Broadbent.

MPH 531 Radiation Biology. The course will consider ionizing radiation effects on single cells, organized tissue and known effects on man. Emphasis will be put on those radiobiological principles that closely relate to cancer treatment. WI (3-0-3) Hanson.

MPH 542 Radiation Oncology. This course will develop the basic concepts and principles of nonsurgical cancer management. The natural history of cancers in various organs will be reviewed and therapeutic strategies developed based on the pathophysiology of different cancer sites. WI (2-0-2) Hendrickson, Lee, Murthy, Staff.

MPH 559 Radiation Protection. This course covers advanced topics in radiation protection, technical approaches for minimizing the dose, authorization to use radioisotopes, responsibilities of users, standards for radiation exposure, airborne contamination limits, transportation of radionuclides, formulation of standards, medical findings on individuals exposed to radiation, sources producing population exposure and federal and state regulations. Prerequisite: MPH 459. FA (3-0-3) Chung-Bin, Lanzl, Majewski, Rozenfeld.

MPH 561 Physics of Diagnostic Radiology. This course covers x-ray generators; recording systems; grids; fluoroscopy; image intensifier TV systems, etc. In addition, an introduction to transfer function analysis of imaging systems is given. (3-0-3) Jette.

MPH 565 Transfer Function Analysis. Starting with a rigorous presentation of Fourier transform theory, this course develops transfer function analysis for application to imaging systems. SP (2-0-2) Jette.

MPH 571 Physics of Nuclear Medicine II. The course covers production of isotopes, radiation detection, pulse height analysis, counting statistics, imaging theory, Fourier analysis, scintillation camera, collimation of radiation, image recording, noise analysis, image processing, quality assurance, radiation safety, evaluation of image quality, digital computers in nuclear medicine, dynamic and functional imaging, emission computed tomography, biokinetics and compartmental modeling and radioimmunoassay. Prerequisite: MPH 471. (3-0-3) Groch.

MPH 575 Nuclear Science Techniques as Applied to Biology and Medicine I. This course covers radioactivity, measuring devices, production modes;

nuclear reactor, cyclotron, generators; radiochemistry, labeling (^3H , ^{14}C , ^{125}I) and autoradiography, body counting, NAA. FA (2-0-2) Rayudu.

MPH 576 Nuclear Science Techniques as Applied to Biology and Medicine II. This course covers labeling ($^{99\text{m}}\text{Tc}$, ^{131}I , ^{75}Se , ^{11}C , ^{13}N , ^{18}F) & Q.C.; tracers for 16 organs; applications in nuclear medicine, therapy, in vitro, hematology; dosimetry; radiation safety; licensing and FDA. Prerequisite: MPH 575. WI (2-0-2) Rayudu.

MPH 590 Medical Physics Research Seminar. This seminar serves as a forum for review of ongoing research by the faculty, appropriate staff members, fellows and graduate students. FA WI SP (2-0-1) Staff.

MPH 597 Introduction to Research. The student will undertake a directed project with a faculty member as an introduction to research. FA WI SP SU (v-v-v) Lanzl, Chung-Bin, Kartha, Rozenfeld, Jette.

MPH 598 Research. Under the guidance of a faculty member and committee, the student originates, proposes and executes basic or clinical research. FA WI SP SU (v-v-v) Lanzl, Chung-Bin, Kartha, Rozenfeld, Jette, Hubbard.

MPH 599 Independent Study. The student will undertake a creative project under the supervision of a faculty member. FA WI SP SU (v-v-v) Lanzl, Chung-Bin, Kartha, Rozenfeld.

MPH 699 Dissertation Research. Postcandidacy research by arrangement with staff. FA WI SP SU (v-v-v)

MEDICAL TECHNOLOGY

MTK 303 Body Fluid Analysis. Analysis of various body fluids with emphasis on the theory and practice of clinical procedures. Component topics will include the analyses of urine, gastric juices, cerebral spinal fluid, feces, semen, transudates and exudates. (3-6-5)

MTK 304 Basic Laboratory Skills. Study and practice of basic laboratory skills used in the various clinical laboratory areas. Topics covered include instrumentation, proper use and maintenance; manual skills such as pipetting, titrating and venipuncture; preparation and standardization of reagents and laboratory calculations. (3-12-7)

MTK 305 Patient Care Techniques. Clinical experience in the hospital patient care areas includes blood collection, specimen handling and processing procedures, as well as interaction with patients and professional staff of the hospital. Prerequisite: MTK 304. (0-6-2)

MTK 405 Clinical Laboratory Information Systems. An introduction to computerized information systems used in the clinical laboratory including development, function, and maintenance. Fundamental computer concepts, concerns in managing computer resources, as well as

system analysis, implementation, and evaluation will be discussed. Laboratory sessions will be used to reinforce the technical material and demonstrate the application of the conceptual issues. (2-0-2)

MTK 421 Practicum in Clinical Chemistry. Rotation through the hospital clinical biochemistry laboratories. The course includes the application of basic skills learned in student chemistry laboratory, instrumentation and advanced methodologies. (0-24-8)

MTK 422 Practicum in Hematology. Rotation through the hospital clinical hematology laboratories. Application of basic skills learned in student laboratory, instrumentation and advanced methodologies are included. Radiohematology, bone marrow techniques and coagulation are also covered. (0-24-8)

MTK 423 Practicum in Immunology. Rotation through the hospital clinical immunology laboratory. Application of basic skills learned in student laboratory, instrumentation, and advanced methodologies are emphasized. (0-16-4)

MTK 424 Practicum in Microbiology. Rotation through the hospital clinical microbiology laboratories. Application of basic skills learned in student laboratory, instrumentation and advanced methodologies are emphasized. (0-24-8)

MTK 425 Practicum in Immunochemistry. Rotation through the hospital blood bank laboratory. Application of basic skills learned in student laboratory, instrumentation and advanced methodologies are emphasized. (0-16-4)

MTK 441 Seminar in Medical Technology. Discussion of current topics in medical technology and associated fields. Students present abstracts. (2-0-2)

MICROBIOLOGY

MIC 311 Diagnostic Bacteriology. Special emphasis is on diagnostic procedures employed in the clinical bacteriology laboratory, such as specimen collection, isolation and identification of medically important bacteria, antibiotic sensitivity testing and determination of serum antibiotic levels. Course includes laboratory exercises associated with these various concepts. Development of proficient skills in the various techniques is stressed. SP (4)

MIC 411 Parasitology, Mycology and Virology. This course provides clinical background in mycology, parasitology and virology. Emphasis is on the disease involved and on diagnostic procedures used in the laboratory. The laboratory portion consists of identification, specimen collection and processing of medically important viruses, fungi and parasites. Prerequisite: MIC 311. SP (3-6-5)

MIC 451 Microbiology Concepts. An introduction to the morphological and physiological characteristics of

infectious agents of importance in human disease. SP (5-1-5) [55 hours] Peeples.

MIC 501 Clinical Bacteriology. The experience provides rotation in each section of the diagnostic bacteriology laboratory with emphasis on laboratory identification of bacteria. Prerequisite: MIC 451. (v-v-v) [4 weeks] Landau.

MIC 505 Basic Microbiology. A graduate introductory course covering basic concepts and laboratory techniques in experimental bacteriology and virology. FA (3-2-4) Peeples.

MIC 523 Molecular Genetics. Contemporary study of topics in gene organization, transcription, translation and gene regulation. Alt. SP (4-0-4) Ogston.

MIC 531 Virology. Advanced study of human and animal viruses and their interactions with cells. Prerequisite: MIC 451. Alt. WI (4-0-4) Peeples.

MIC 561 Clinical Microbiology for Graduate Students. A review of critical topics in clinical microbiology from the clinical and pathologic viewpoints. SP (3) Landau, Peeples.

MIC 590 Special Topics. Detailed independent study of contemporary topics in microbiology. (v-v-v) Staff.

MIC 599 Independent Study. Specialized course work designed around the particular needs of an individual student. (v-v-v) Staff.

MIC 610 Clinical Microbiology. Students will rotate through each of the basic areas of the microbiology laboratory. Specimen handling, laboratory identification of organisms and clinical correlation are covered. Permission of instructor. Prerequisite: any core clerkship. [2 weeks] Landau.

NEUROLOGICAL SCIENCES

NEU 451 Medical Neurobiology. An integrated approach to the central and peripheral nervous system from an anatomic, physiologic and neurochemical standpoint is presented. Based on neuroanatomy, major systems are developed and discussed in terms of anatomic arrangement, physiologic functioning and related synaptic pharmacology. In all systems clinical lectures highlight the practical applications of basic science concepts in patient evaluation and management. (4-3-5) [78 hours] Kerns, Zimmerman.

NEU 501 Introduction to Neuroscience. The physiology of neurons and glia, synaptic processes, sensory receptor physiology, spinal cord, cerebellum and motor control, peripheral mechanisms in sensory systems and higher functions of the nervous system. Neuroanatomical concepts will be correlated to the physiology. Prerequisite: ANA 465. WI (4-0-4)

NEU 601 Core Clerkship in Neurology. Patients with various neurological disorders are studied; invasive and

noninvasive techniques are observed and practiced. Designed to maximize the use of time that students spend in neurology, extensive discussion of each case by senior resident staff and attending physicians are utilized to enhance exposure to neurologic disease. Formal lectures, attendance at weekly department conferences and teaching rounds held six days a week provide training in basic neurodiagnostic techniques. Prerequisite: MED 601. FA WI SP SU [4 weeks] Bergen.

NEU 602 Advanced Neurology. Students further develop their clinical skills as they participate in the outpatient activities of the neurology department including seeing patients in the movement disorder, epilepsy, muscular dystrophy and multiple sclerosis clinics. Prerequisites: MED 601, NEU 601. FA WI SP SU [4 weeks] Bergen.

NEU 603 Clinical Neurology II. A unique opportunity for intensive exposure to general neurology practice is provided in a busy community hospital setting. MacNeal Hospital neurology service provides both inpatient and outpatient experience. Prerequisite: MED 601. FA WI SP SU [4 weeks] Palac.

NEU 621 Critical Care Neurology. The student will learn to evaluate and manage patients with various critical neurological problems (e.g., coma, stroke, status epilepticus, brain death) and understand the use of diagnostic studies in these conditions. Approval of course director required. Prerequisite: NEU 601. FA WI SP SU [v] Bleck.

NEU 681 Neurological Research. Students participate in ongoing research projects within the department. Current areas of investigation include neuropharmacology, movement disorders, cerebrovascular disease, sleep disorders, epilepsy, neuromuscular disorders, multiple sclerosis, and dementia. Prerequisite: NEU 601. FA WI SP SU [v] Bergen.

NURSING--ANESTHESIA

NAN 521 Chemistry and Physics in Anesthesia I. An introduction to chemistry and physics in anesthesia. Major emphasis is on the principles of organic chemistry. FA (3-0-3)

NAN 522 Chemistry and Physics in Anesthesia II. Focus is on physics in relation to anesthesia. Emphasis is on gas laws specific to anesthesia, states of matter, thermodynamics and solutions relevant to physical properties. Prerequisite: NAN 521. WI (3-0-3)

NAN 600 Residency in Anesthesia Nursing. A 52-week, 4-quarter residency following completion of the anesthesia nursing curriculum which provides the opportunity for clinical proficiency in anesthesia practice. Includes journal clubs and conferences. No academic credits given.

NURSING--GERONTOLOGICAL

NGR 514 Gerontological Nurse Practitioner Concepts. A seminar focusing on organizational, economic, legal and behavioral factors influencing implementation of the gerontological nurse practitioner role. Prerequisite: NGR 513. (3-0-2) Offered last in 1989-90.

NGR 515 Gerontological Nurse Practitioner Practicum. Directed practice in a variety of settings is provided. Prerequisite: NGR 513. (v-v-1) Offered last in 1989-90.

NURSING

NUR 302 Foundations of Nursing Practice. An introduction to the nursing process, providing the necessary beginning for integration of the biological, behavioral, and management concepts required to understand contemporary nursing practice. Emphasis is placed on professional nursing concepts and includes nursing diagnosis, nursing process, communication, patient education, and physical assessment. Corequisite: NUR 305 (4-2-6)

NUR 305 The Role of the Nurse in Health and Illness. This course focuses on the role of the nurse in health promotion and illness prevention. Chronicity and ethics are included. Clinical experiences focus on wellness. Corequisite: NUR 302 FA (2-2-4)

NUR 314, 315 Medical Surgical Primary Clinical I, II. Two five week courses in pathophysiology, advanced health concepts, and application of related nursing science. Integrating the concepts of Foundations, Role of the Nurse in Health and Illness, and the Natural Science basis for Nursing Practice this course assists the learner to utilize the nursing process in promoting optimal health and minimizing the complications of disease. Courses offered for 5 weeks. Prerequisite: NUR 302, NUR 305, NUR 341 - 344 or equivalent. (2-18-5)

NUR 316 Pediatric Nursing Primary Clinical. The basic principles, concepts and theories necessary for practice in pediatric nursing. Concepts of growth and development, the nursing process, family centered care, and health promotion will be integrated throughout the course. The focus will be on commonly occurring health problems in the pediatric population. Clinical experiences will be provided in clinical settings caring for children from birth through adolescence. In patient settings will be used that care for children with both acute and chronic illnesses. Course offered for 5 weeks. Prerequisite: NUR 302, NUR 305, NUR 341 - 344 or equivalent. (2-18-5)

NUR 317 Obstetrical Nursing Primary Clinical. A basic course in obstetrical nursing which integrates knowledge obtained in the biological and behavioral sciences. Normal physiologic and psychosocial adaptations during the childbearing cycle are discussed as well as the common problems that occur in mother and infant. The clinical area focuses on the nursing management of the childbearing family. Course offered for 5 weeks. Prerequisite: NUR 302, NUR 305. (2-18-5)

NUR 318 Gerontological Nursing Primary Clinical. This course focuses on the clinical management of common health problems of the older adult. Common age related physiologic and psychosocial adaptations are also examined. Course offered for 5 weeks. Prerequisite: NUR 302, NUR 305. (2-18-5)

NUR 319 Community Nursing Primary Clinical. Basic concepts of community health nursing practice with individuals, families, and communities. Identification of the roles and functions of the community health nurse in view of the health illness continuum. The nursing process will be utilized to provide care and clinical experience in the home, outpatient settings, and community agencies. Course offered for 5 weeks. Prerequisite: NUR 302, NUR 305. (2-18-5)

NUR 320 Psychiatric Nursing Primary Clinical. The major psychiatric disorders and their management are covered, as well as communication skills necessary for a therapeutic relationship. Pre or Corequisite: A110 Theof Hum Resp. Course offered for 5 weeks. Pre or Corequisite: NUR 302, 305, 363. (2-18-5)

NUR 341 Natural Science Basis for Nursing Practice: Microbiology. An introduction to the characteristics of bacteria, fungi, algae, protozoa, and viruses. Environmental microbiology and pathogenesis are emphasized. Laboratory methods are not included. WI (2-0-2)

NUR 342 Natural Science Basis for Nursing Practice: Inorganic Chemistry. An introduction to the fundamentals of inorganic chemistry. Compound structures, the periodic table, laws and theories of chemical reactions, solutions, gases, and acid base will be presented. SU (2-0-2)

NUR 343 Natural Science Basis for Nursing Practice: Organic Chemistry and Biochemistry. The composition, structure, properties, and reactions of carbon compounds and biological substances and process will be discussed. Emphasis will be on those aspects of organic chemistry which are important in understanding biochemistry and biologically important compounds. FA (3-0-3)

NUR 344 Natural Science Basis for Nursing Practice: Anatomy and Physiology. A systems approach will be used as the organizational framework for this introductory course. Each unit represents content that is fundamental to understanding the structure and function of the human system being studied. SU (4-0-4)

NUR 361 Pathophysiology. A conceptual approach to the alterations in normal physiologic processes that can occur during the life cycle. Prototypes will be used to illustrate disease concepts. Prerequisite: All modules of Natural Science Basis for Nursing (NUR 341-344) or its equivalent. FA (3-0-3)

NUR 363 Theories of Human Response to Illness. Human responses to illness will be discussed using various conceptual frameworks. Nursing approaches that facilitate adaptation will be explored. FA WI (4-0-4)

NUR 382 Introduction to Nursing Research. An introduction to the basic concepts, techniques, and methods of the research process and evaluation of contemporary nursing research. Prerequisite: An introductory statistics course. SP (2-0-2)

NUR 390 Selected Topics in Nursing. Focuses on concepts and techniques to enhance the professional development of registered nurse students. Role transition to baccalaureate nursing is discussed. The course is prerequisite for NUR 314 to 320, and 411 to 413. FA (2-3-3)

NUR 402 Heritage of Nursing. Study of the development of the nursing profession and contribution of nursing leaders within the context of societal and cultural factors. Emphasis is on the contribution, trends, and issues that influence individuals and the nursing profession. SP (3-0-3)

NUR 403 Social Systems Theory and Nursing. Theories and dynamics of social systems will be examined as they relate to nursing practice. A life span approach will be used. FA (2-0-2)

NUR 405 Role of the Nurse in Health Care Systems. Content focuses on the role of the nurse as leader and manager as well as an examination of the organizational content of health care delivery systems. Ethical political, and professional issues are presented. Prerequisite: Four primary clinical courses 314-320 inclusive FA (3-0-3)

NUR 406 Nursing and the Human Condition. Works of literature are used to explore issues of the human condition related to suffering, death, and professional ethics confronting nurses in professional practice. FA (3-0-3)

NUR 407 Autonomy and Heteronomy. Explores the tension between the requirements of the authentic self and the needs of society through the representative works of selected authors. SP (2-0-2)

NUR 408 Women's Health Care: The Provider's Role. Physiological, psychological, sociological, cultural, and historical perspectives of women throughout the life span are discussed. Nursing principles are integrated with empirical data for the promotion of optimal functioning. WI (2-0-2)

NUR 410 Educational Processes in Nursing. Theories of teaching-learning will be examined and applied to nursing practice. SP (2-0-2)

NUR 411 Nursing for Health Promotion and Maintenance. Emphasis is given to health promotion and focuses on practice and management of population groups. Student practice is in medical, surgical, gerontological, community, psychiatric, and parent child nursing areas. Prerequisite: Four primary clinical courses 314-320 inclusive (2-18-5)

NUR 412 Nursing for Health Restoration and Support. Focus is on the integration of science, technology, and art of nursing practice with complex, acutely ill patients of all ages... Skills are enhanced in physical and psychosocial assessment, clinical decision making, and interventions for the acutely ill, high risk patient and their families. Health care trends, ethical and legal issues that affect the acutely ill child, adult and elderly individual are discussed. Student practice is in medical, surgical, gerontological, community, psychiatric, and parent child nursing areas. Prerequisite: Four primary clinical courses 314-320 inclusive (2-18-5)

NUR 413 Nursing for Continued Care and Rehabilitation. Focus is on issues and common problems experienced by individuals of all ages with chronic physical and mental illnesses and disabilities. Emphasis is on the promotion of optimal functioning of the chronically ill and/or disabled individual and the family. Student practice is in medical, surgical, gerontological, community, psychiatric, and parent child nursing areas. Prerequisite: Four primary clinical courses 314-320 inclusive (2-18-5)

NUR 421 Selected topics in Neuroscience Nursing. A biophysical perspective is used to integrate neuroscience nursing. Basic concepts of neurologic dysfunction are discussed across the continuum of health care delivery from critical care through rehabilitation. WI (3-0-3)

NUR 422 Basic Cardiac Arrhythmias. Self-paced mastery learning mode used to help students recognize and describe common disorders of cardiac rhythm, hemodynamic mechanisms and nursing implications. Prerequisite: NUR 361. SP (2-0-2)

NUR 423 Intraoperative Nursing. Focus is on intraoperative phase of patient care. Prerequisite: Four primary clinical course, NUR 314, 315 inclusive. FA SP (4)

NUR 424 Post-Anesthesia Care. Focus is on providing care of the patient in the immediate post operative period. Post operative and post anesthetic assessment, implementation of the PAR theory and concepts. Prerequisites: Four primary clinical course NUR 314 -320 inclusive. (0-6-2)

NUR 441 Independent Clinical Study. Intensive independent study in a clinical area of nursing. (v)

NUR 449 Independent Study. Student contracts with nursing faculty for independent academic study in an area of nursing. (v)

NUR 472 Introduction to Normal and Clinical Nutrition. The focus of the course is nutrition and its relation to health and illness. Concepts to be explored include nutritive substances and processes, recommended dietary allowances, the basic four food groups, evaluation of nutritional status, and changing nutritional requirements throughout the life cycle. Drug and nutrient interactions, food misinformation, hospital diets, and specialized nutritional support techniques are also examined. WI SP (2-0-2)

NUR 501 The Use of Concepts, Models, and Theories in Nursing Practice. Emphasis of seminar course is on the use of models, the theoretical basis, and the operation of models in nursing. FA SP (2-0-2)

NUR 502 Role of the Nurse in Advanced Practice. Examination of professional nursing issues including legal, ethical, legislative, and economical components. Models are examined that influence the scope of practice of nurses in advanced practice roles. FA SP (2-0-2)

NUR 503 Physical Assessment. A comprehensive systematic approach is presented for obtaining and recording a complete patient history and physical examination. Emphasis is placed on developing the problem oriented record and use of diagnostic instruments. FA WI SP SU (2-3-3)

NUR 504 Management of Emergent Cardiopulmonary Situations. Focus is on the application of principles of advanced cardiac life support and emergency care to develop skills in understanding and managing acute respiratory and cardiac emergencies. Upon completion of this course, students have the opportunity to become ACLS certified. SU (1-3-2)

NUR 505 Ambulatory Diagnostics. Preparation in laboratory techniques necessary for the delivery of primary health care practice is provided. FA SU (1-3-2)

NUR 521 Nursing Research: Critique for Practice. Research studies are analyzed and evaluated relative to an identified clinical problem. Includes concepts, methods, and strategies inherent to the research process with a focus on design, internal and external validity, sampling, measurement, and ethical issues. Prerequisite: PVM 541 or equivalent. WI SU (2-0-2)

NUR 522 Health Promotion and Disease Prevention. Models are used to discuss health states and to design health promotion strategies for community groups. Topics include target behaviors for intervention, forces influencing life style, and nursing practice techniques for improving health outcomes. SU (3-0-3)

NUR 523 Concepts and Issues in Clinical Nutrition. Current concepts and issues in clinical nutrition are examined. All age groups are included. Topics include: nutritional assessment, management of critically ill and immunosuppressed patients, ethical issues, physical fitness and athletic performance, obesity and other nutritional disorders. Prerequisite: Previous nutrition course. SP (2-0-2)

NUR 524 Scientific Basis of Cancer Treatment. Focus is on the scientific basis of diagnostic and therapeutic modalities of malignant disease including surgery, radiation therapy, chemotherapy, immunotherapy, and bone marrow transplantation. Relevant theories, research, and clinical applications are examined. W (2-0-2)

NUR 525 Management Issues in Nursing. The theoretical and practical aspects of current issues in nursing management are explored. WI SP (3-0-3)

NUR 531 - 535 Clinical Seminars in Master of Science Nursing Practice. A matrix of nursing courses that allows concentrated study in aspecialized area of nursing practice at the Master's level.

NUR 531A Basic Principles of Anesthesia Nursing Care. Principles and skills basic to the practice of anesthesia are discussed. Focus is on patient assessment and planning care. Prerequisite NAN 521 WI (3-0-3)

NUR 531B Advanced Principles of Nursing Care in Anesthesia Nursing. Anesthesia principles related to surgical specialties and perioperative management are discussed. Emphasis is on understanding of anatomic, physiologic/pathologic principles, and use of pharmacologic intervention. Prerequisite: NUR 531A sec 1 SP (3-0-3)

NUR 531C Anesthesia Nursing Care of the Pediatric and Obstetrical Patient. Anesthesia related to the specialty areas of pediatrics and obstetrics is discussed. Specific assessment and planning skills needed for these patient groups are highlighted. Prerequisite NUR 531A sec 2 SU (3-0-3)

NUR 531D Anesthesia Practicum. Experience is provided in clinical anesthesia with supervision by a CRNA and/or anesthesiologist. Corequisite NUR 531 A 3. SU (0-21-7)

NUR 532A Community Health Assessment: Basic Concepts and Methods of Community Health. Introduction to concepts and methods of assessing health status among community groups is presented. Theories and epidemiological frameworks are incorporated into the health assessment of groups and populations. WI (2-0-2)

NUR 532B Community Health Assessment: Assessment, Diagnosis and Community Planning. Theoretical frameworks are used for the diagnosis of and planning for data based community health problems. SP (3-0-3)

NUR 532C Community Health Assessment: Program Implementation and Evaluation. Formulation of implementation strategies and evaluation schemes for program development are discussed. Emphasis is on evaluation methods and innovative nursing practice in the community. SU (2-0-2)

NUR 532D Home Health Delivery Systems. Focus is on home care delivery systems, provision of quality care to the patient in the home, and administrative theories to the management of agency and staff. WI (3-0-3)

NUR 532E Nursing Care of the Patient in the Home. Focus is on common clinical nursing problems in home care. Discussion includes comprehensive case management of physiological and psychosocial problems associated with the care of home bound persons of all ages. SP (3-0-3)

NUR 532F Home Health Management. An overview is given of the history and trends that effect the current home health environment. Regulatory, legislative, and competitive forces impacting home care delivery are discussed. SU (3-0-3)

NUR 533A Assessment and Screening in Parent/Child Nursing. Evaluation of assessment and screening tools in the care of parents, children and families is presented. Emphasis is on risk assessment. WI (3-0-3)

NUR 533B Nursing Care in High Risk Pregnancy. Focus is on recognition of actual and potential complications of pregnancy. Emphasis is on anticipatory guidance and nursing management. SP (3-0-3)

NUR 533C Nursing Care of the High Risk Neonate. Focus is on actual and potential complications of the neonatal period. Emphasis is on care of the premature infant. SU (3-0-3)

NUR 533D Nursing Care of the Acutely Ill Child. Management of acute health problems in the pediatric age groups is discussed. Developmental issues, research analysis, patient and family teaching is incorporated. SP (3-0-3)

NUR 533E Nursing Care of the Chronically Ill Child. Management of chronic health problems in the pediatric age groups is discussed. Family functioning, long term care issues, emotional, social, economical implications are incorporated. SU (3-0-3)

NUR 534A Nursing Care of the Ill Adult. Focus is on the physiological and psychological concepts applicable to the medical and surgical adult patient. Advanced practice is addressed with application of concepts to particular area of student interest. WI (3-0-3)

NUR 534B Nursing Care of the Critically Ill Patient. Concepts from basic and applied sciences of critical care nursing and research based strategies for implementation are applied to critically ill populations of all age groups. Prerequisite: NUR 531 D 1. SP (3-0-3)

NUR 534C Nursing Care of the Chronically Ill Adult. The impact of chronic illness on the adult is explored. Strategies for nursing management of common problems are emphasized. SP (3-0-3)

NUR 534D Nursing Care of the Cancer Patient. Focus is on clinical manifestations of infection, sepsis,

spinalcord compression, nausea and vomiting, and stomatitis observed in cancer patients. Pathophysiological bases and interventions to prevent or minimize these manifestations are discussed. Emphasis is on the physiological and psychosocial sequelae. SP (3-0-3)

NUR 534E Nursing Care of the Orthopaedic Patient. Skeletal function and movement are the foundations for discussion of nursing care related to selected orthopaedic problems. All age groups are included. Process and outcome criteria for common orthopaedic nursing diagnoses are emphasized. SP 1991 (3-0-3)

NUR 534F Nursing Care of the Neurologic Patient. Nursing care of patients with nervous system dysfunction is explored on a continuum from critical care through rehabilitation. SP1991 (3-0-3)

NUR 534G Nursing Care of the Transplant Patient. Research related to transplantation including immunology, infectious disease, and current practice of pre, intra, and postoperative care, organ procurement, ethical, and psychosocial issues is discussed. SU (3-0-3)

NUR 534H Nursing Care of the Cardiopulmonary Patient. Research based nursing care of patients is studied with ischemic, mechanical, electrical, ventilatory, oxygenation, perfusion and diffusion disturbances. All age groups are included. SP (3-0-3)

NUR 534J Nursing Care of the Cardiopulmonary Rehabilitation Patient. Research based concepts are studied of risk factor modification, activity tolerance and prescriptions, quality of life, limiting disease progression and evaluating rehabilitation benefits across the lifespan. SU (3-0-3)

NUR 534K Nursing Care of the Older Adult. Management of common health problems of older adults is studied. Emphasis is on assessment and intervention related to health promotion, health maintenance, and restorative care. WI (3-0-3)

NUR 534L Nursing Care of the Disabled Patient. Focus is on concepts and theories necessary for delivering and coordinating care and promoting independence in physically disabled individuals in institutional and community settings. WI (3-0-3)

NUR 535A Assessment and Evaluation in Delivery of Mental Health Services. Focus is on the multiaxial assessment and interventions of major psychiatric syndromes within the context of the changing mental healthcare system. FA (3-0-3)

NUR 535B Nursing Care of the Psychiatric Patient. Theoretical basis for psychotherapeutic nursing interventions is examined from a developmental perspective. The collaborative work of nurse and client is examined from initial contract through termination. WI (3-0-3)

NUR 535C Group Psychotherapy. An in depth analysis of theory and research is presented as a basis

for the clinical practice of group psychotherapy. SU (3-0-3)

NUR 541 Master's Practica. A minimum of 12 quarter hours of specialty practice are planned conjointly by the master's student and faculty member. Prerequisite or Corequisite: Selected NUR 531. Clinical conference is included. (v)

NUR 547 Independent Clinical Study. Intensive independent study in a specialty clinical area of nursing is provided with faculty contract. Prerequisite: NUR 541. (v)

NUR 548 Master's Thesis. Contract with faculty member and Associate Dean for Nursing Education for completing a master's thesis. Minimum enrollment: 3 quarter hours each quarter. (v)

NUR 549 Independent Study. Contract with faculty member for conducting an independent academic study in a specialized area of nursing. (v)

NUR 551 Evaluation of Theories. Various methods of theory analysis are discussed and selected theories are analyzed. Emphasis is on utility of theories in nursing practice, education, and management. Prerequisite: NUR 501 or equivalent. WI (2-0-2)

HSM 560 Health Care Policy. Topics studied are health policy as part of the environment for providers, processes by which providers can influence policy formation, methods of policy analyses, and pertinent recent history and relevant trends. FA SP (3-0-3)

NUR 553 Impact of Complex Systems on Health Care. Focus is on the impact of economic, political, technological, regulatory, and competitive forces on health care. WI (2-0-2)

NUR 571 Utilization of Nursing Research in Clinical Practice. Issues associated with diffusing nursing research and the challenge to incorporate research findings into the practice of nursing are studied. Theories and conceptual frameworks are critically analyzed that describe processes for using research to change nursing practice. Corequisite: PVM 542 or equivalent. WI (2-0-2)

NUR 580 Nurse Doctorate: Issues in Practice. Focus is on in depth discussions of clinical issues related to a practice area. (2-0-2)

NUR 581 - 583 Clinical Seminars in Nurse Doctorate Practice. Nursing seminars are planned that allow concentrated study for specialized nursing practice at the Doctor of Nursing level.

NUR 581A Primary Health Care of Children. Synthesis of physical, psychosocial and developmental theories and concepts are provided for the management of well children by nurse practitioners. Emphasis is on health promotion and disease prevention. SP (3-0-3)

NUR 581B Primary Health Care of Acutely Ill Children. Analysis of research and theories for management of common pediatric illnesses is discussed.

Emphasis is on the integration of content for the clinical setting and collaborative care between nurse and physician. FA 1990 (3-0-3)

NUR 582A Primary Health Care of Women. Focus is on health maintenance and management of common gynecologic problems throughout the life cycle. Antepartal, postpartal, and interconceptual care is included. SU (3-0-3)

NUR 582B Primary Health Care of Adults. A theoretical and research based developmental approach to provide primary health care to adults in ambulatory settings is presented. FA 1990 (3-0-3)

NUR 582C Primary Health Care of Elderly. Focus is on primary health care of older adults in community and long term care settings. SP FA 1990 (3-0-3)

NUR 583A Nursing Interventions in Dysfunctional Family Systems. Theoretical approaches and current research on dysfunctional family systems are reviewed as a basis for primary, secondary, and/or tertiary nursing interventions and program development. Prerequisite: BHV 522 WI 1991 (3-0-3)

NUR 583B Psychiatric Nursing Care of the Geriatric Patient. Theoretical and clinical aspects of common geropsychiatric problems such as depression, dementia, paranoia and somatization are studied. WI 1991 (3-0-3)

NUR 583C Supervision of Advanced Psychiatric Nursing Practice. The supervision process is examined for the practice of psychotherapy of individuals, families, and groups. Theoretical perspectives and current research of clinical supervision is incorporated. WI 1991 (3-0-3)

NUR 586 Introductory Multivariate Statistics. Concepts of multivariate statistics are introduced including multivariate regression, analysis of variance, cluster analysis, factor analysis, and Log'Linear modeling. Prerequisite: Intermediate statistics. SU (3-0-3)

NUR 588 Doctor of Nursing Project. An individual, or a group of students, contract with faculty members and Associate Dean for Nursing Education to plan, initiate, and evaluate a research based change in nursing practice. (v)

NUR 591 Doctor of Nursing Practica. A minimum of 8 credit hours of specialty practice are planned conjointly by the nurse doctorate student and faculty member. Prerequisite or Corequisite: Selected NUR 581.

NUR 596 Nurse Doctorate Seminar. Student and faculty identify and explore issues and problems that evolve as students develop and enact dimensions of the nurse doctorate role. Prerequisite: NUR 591. SU (2-0-2).

NUR 599 Independent Study. Student contracts with faculty member for independent academic study in a selected area of nursing. (v).

NUR 601 Theory Development. Theory construction is explored through the study of the philosophy of science. Course extends over two quarters. FA WI (2-0-4).

NUR 621 Infant Mental Health. Focus is on assessment of normal and high risk parent/infant relationships and interventions with families whose infants are at risk for attachment disorders. SP (2-0-2).

NUR 622 Nursing Concepts, Models, and Research Methods in the Study of the Life Cycle. An overview of theories is included of individual development throughout the life span. Innovative research methodologies are explored to study individual development in the context of the environment. SP (3-0-3)

NUR 671, 672 Research Design and Methods I, II. Promoted are the development, integration, and application of knowledge, attitudes, and skills requisite to functioning as a clinical nurse scientist. Emphasized are the critical appraisal of selected measuring mechanisms and the design of clinical nursing research study. Prerequisite: PVM 543 or 8 q.h. graduate statistics. NUR 671 WI SU (3-0-3) NUR 672 SP SU (3-0-3)

NUR 675 Qualitative Research Methods. Focus is on selected issues in the design, conduct, and reporting of qualitative research. Experience with data management and analysis is included. Prerequisite: NUR 672. SU (2-0-2).

NUR 688 Directed Research. Independent research experience to test theory and/or gather data under the guidance of a faculty member is provided. (v).

NUR 689 Research Grantsmanship. Information and skills essential to the process of development and submission of a research grant application is provided. SU (1-0-1).

NUR 691 Doctorate of Nursing Science Practica. At least 20 credit hours of individually designed courses of independent study are planned conjointly by the doctoral student and the academic advisor. (v).

NUR 696 Doctorate of Nursing Science Seminar. Students and faculty critically analyze the components of clinical practice in nursing at the Doctor of Nursing Science level. SU (2-0-2).

NUR 699 Dissertation Research. Contract with faculty members and Associate Dean for Nursing Education for independent research. Doctoral candidate must be enrolled for at least three quarter hours each quarter until dissertation has been defended. (v).

CLINICAL NUTRITION

NTR 321 Introduction to Normal and Clinical Nutrition. Designed for undergraduate nursing students, topics cover basic principles of nutrition: nutrition substances and processes; the basic four food groups;

recommended dietary allowances and nutritional requirements throughout the life cycle. The following nursing issues will be discussed: evaluation of nutritional status; drug and diet interrelationships; nutritional management of selected diseases and specialized nutrition support techniques. (1-2)

NTR 503 Management in Dietetics. An examination of management strategies and techniques used in delivery of food and nutrition services in a health care setting. FA (3-0-3)

NTR 505, 506 Clinical Diet Therapy I, II. Emphasis is placed on the technical, conceptual and humanistic skills which provide the foundation for clinical dietetics practice. Limited to clinical nutrition students in Track I. SP SU (2-0-2) (2-0-2)

NTR 511, 512 Supervised Experience in Food Service Management I, II. The student will participate in experiences designed to develop technical, human and conceptual skills essential for management of food service systems. Limited to clinical nutrition students in Track I. FA WI (0-24-3) (0-24-3)

NTR 513, 514 Supervised Experience in Clinical Dietetics I, II. The student will participate in experiences designed to develop the technical, conceptual and humanistic skills necessary to function in the practice of clinical dietetics. Limited to clinical nutrition students in Track I. SP SU (0-20-3) (0-20-3)

NTR 515 Supervised Dietetic Staff Experience. The student will assume full responsibility for a patient care unit under the supervision of a staff dietitian. FA (0-40-5)

NTR 521 Human Metabolism I. Lectures describe the synthesis and degradation of nucleic acids and proteins. Limited to clinical nutrition students or permission of instructor. FA (3-0-3)

NTR 522 Human Metabolism II. Lectures describe anabolic and catabolic pathways of carbohydrates, lipids and amino acids. Limited to clinical nutrition students or permission of instructor. Prerequisite: NTR 521. WI (3-0-3)

NTR 524 Advanced Mineral and Vitamin Metabolism. Lectures and readings describe current consensus on the functional aspects of these micronutrients in man. Permission of instructor required. Prerequisite: NTR 522. (3-0-3)

NTR 527 Advanced Protein Metabolism. Lectures and readings review mammalian protein metabolism in liver, muscle, intestine and brain and emphasize metabolic changes in response to various diets, infection and certain disease states. Permission of instructor required. Prerequisite: NTR 522. (3-0-3)

NTR 528 Advanced Carbohydrate and Lipid Metabolism. Lectures emphasize the role of diet composition and starvation in the regulation of

carbohydrate and lipid metabolism. Permission of instructor required. Prerequisite: NTR 522. (4-0-4)

NTR 534 Nutrition in Critical Care. Current rationale and techniques for assessing patient requirements and monitoring nutritional therapy in nonvolitionally fed patients. The latter part of the course reviews formulae used in the metabolic support of patients with liver, renal or lung disease. Special attention is given to metabolic complications associated with intravenous feeding. FA (1-4-3)

NTR 535 Nutrition in Sports and Fitness. A study of nutritional aspects of exercise physiology with the practical issues of providing nutrition services in various exercise settings. Nutrition considerations unique to active populations, such as elite and recreational athletes as well as individuals on medically prescribed exercise for disease management, will be examined. FA (3-0-3)

NTR 541, 542 Interrelationships of Nutrition and Disease I, II. The student will describe current theories of pathophysiology, diagnosis and treatment for nutritionally related disorders. Limited to clinical nutrition students. Prerequisite: NTR 522. SP SU (4-0-4) (4-0-4)

NTR 543 Physiological Basis of Exercise and Nutrition. An examination of the physiological and metabolic adaptations to exercise and physical conditioning. Special attention is given to the nutritional needs of the human body in response to specific types of exercise. Prerequisite: biochemistry, advanced nutrition, physiology, or permission of instructor. FA (4-0-4)

NTR 544 Nutrition in Sports. Analysis of literature pertaining to nutrition, exercise, and the effect on various population subgroups. The practical aspects of nutrition management for elite, scholastic, collegiate, and recreational athletes will be examined. Prerequisite: NTR 543 or permission of instructor. WI (2-0-2)

NTR 545 Nutrition in Fitness and Wellness. An examination of the role of nutrition and exercise in the prevention of chronic diseases. The development, promotion, implementation, and evaluation of fitness/wellness programs for a variety of settings and disease conditions will be explored. Prerequisite: NTR 543 or permission of instructor. SP (3-0-3)

NTR 565, 566 Seminar I, II. Students and faculty will present topics/research related to food, nutrition and food service management. All departmental research is presented in this forum. FA WI (1) (1)

NTR 572 Nutrition Communication I. Theories and strategies of nutrition education, counseling, interviewing, and preparation of instructional materials will be addressed. A variety of communication techniques will be applied to specific practice settings and evaluated for effectiveness. Video-taped presentations and interviews will be used to enhance oral skills. SP (2-0-2)

NTR 573 Nutrition Communication II. Individualized application of communication theory in the nutrition care setting. SU (0-3-1)

NTR 574 Management in Nutrition Care Systems. Emphasis is on the delivery of optimum nutrition care within the cost effective parameters of an evolutionary health care system. WI (3-0-3)

NTR 582 Introduction to Research. An orientation to research designs and methodologies; collection and analysis of data for specified objectives and preparation of a proposal for NTR 585 or 586. FA (2-0-2)

NTR 583 Applied Research in management. Under faculty supervision, the student will conduct a research project in food service operations. The project will be written in formal research style and presented orally before faculty and staff. FA (1)

NTR 585 Applied Research Problem. Under faculty supervision, the student will conduct a research project and prepare a written research report which includes a statement of the problem, review of the literature, research methodologies, findings, discussion and conclusions. Project approval by both the faculty preceptor and the course director is required six weeks prior to enrollment. For Track II students only. May be repeated for a total of six credits. Prerequisite: NTR 582. (1-6)

NTR 586, 587, 588. Applied Research Problem I, II, III. Students and faculty will present and critique current research literature from the field of dietetics. Particular emphasis will be placed on research design, methodology, data analysis, and scientific integrity. Under faculty supervision, the student will conduct a research project and prepare a written research report. Prerequisite: NTR 582. SP SU FA (3) (3) (3)

NTR 590 Special Topics. In depth examination of timely professional issues. Content varies according to topic choice for the quarter with presentations from faculty and guest speakers. FA (1-0-1)

NTR 592 Specialized Clinical Practice. For students who wish advanced experience in one or more areas of clinical nutrition practice. Limited to clinical nutrition students. (0-v-v)

NTR 599 Independent Readings. The student completes a literature research and written paper on a topic related to nutrition that will complement his/her learning goals. Arrangements for study must be made with the preceptor prior to registration. (0-0-v)

OBSTETRICS AND GYNECOLOGY

OBG 601 Core Clerkship in Obstetrics and Gynecology. A study of the female reproductive tract with emphasis on routine gynecologic health care maintenance and patient education. Identification and management of high-risk pregnancy, infertility and other endocrinopathies, gynecologic oncology, family planning, psychosomatic disorders and normal psychological changes in obstetrics and gynecology as well as gynecologic surgery are some of the areas covered in

detail. Prerequisite: CCS 502. FA WI SP SU [8 weeks] Boatwright.

OBG 621 Advanced Obstetrics. Emphasis is on the ideal support of the normal pregnant patient. Specific areas covered are preparation for childbirth (Lamaze, etc.), psychology of childbirth, alternative methods of childbirth, Leboyer method, and patient-infant bonding. Prerequisite: OBG 601. FA WI SP SU [4 weeks] Merrick.

OBG 631 Maternal Fetal Medicine/High Risk Obstetrics. Identification and management of high risk pregnancy.. Ultrasonography, amniocentesis, medical and surgical complications of pregnancy, and operative obstetrics are some of the specific topics dealt with in detail. Students participate in ante-partum management of hospitalized and ambulatory pregnant patients with high risk conditions. Additional exposure to intra-partum problems is obtained through daily clinical teaching rounds and through follow-up of high-risk ante-partum patients as they go through labor and delivery. Special experiences and involvement in genetic counseling, prenatal diagnosis and obstetric ultrasound are also available. Prerequisite: OBG 601. FA WI SP SU [4 weeks] Strassner.

OBG 661 Gynecologic Oncology. The diagnosis, management and follow-up of female reproductive tract tumors. Students are introduced to the use of diagnostic procedures such as colposcopy, laparoscopy, and biopsies, as well as treatment with chemotherapy and cancer surgery. Prerequisite: OBG 601. FA WI SP SU [4 weeks] Yordan.

OBG 666 Ambulatory/Reproductive Health Care. Students are provided additional clinical experience in family planning practices. Students interview and examine patients, prescribe methods of family planning, and conduct follow-up under supervision of the staff. There is a limited time in the main operating room doing minor and major gynecologic procedures. Prerequisite: OBG 601. FA WI SP SU [4 weeks] Boatwright.

OBG 667 Reproductive Endocrinology and Infertility. Diagnostic evaluation and therapeutic management of couples with infertility problems and women with gynecologic endocrine disorders are studied. Students participate in routine diagnostic studies, such as ovulation timing, postcoital tests, and endocrine evaluation and are introduced to the use of diagnostic and therapeutic procedures such as hysterosalpingography, ultrasonography, laparoscopy, and hydrotubation. Students scrub on surgical reconstructive procedures involving the female reproductive system, participate in the activities of the in vitro fertilization program and may obtain laboratory experience with other procedures.. Prerequisite: OBG 601. FA WI SP SU [4 weeks] Dmowski.

OCCUPATIONAL THERAPY

OCC 450 Special Studies. Introduction to medical terminology and computer science utilizing PLATO, the computer-based education system. FA (0-v-1) Hughes, Staff.

OCC 461 Health and Development. The nature of health, illness and disability and their effect on the fulfillment of developmental roles and functions throughout the life span. FA (3-0-3) Opacich.

OCC 463 Principles of Movement. The biomechanics of movement and the application of neuromusculoskeletal function to the performance of daily living tasks and activities are emphasized. FA (2-2-3)

OCC 465 Group Dynamics. Didactic and experiential activities designed to familiarize the student with basic principles underlying group process and group behavior and clinical application of these principles in occupational therapy are studied. Prerequisites: OCC 501, PSY 501. WI (2-2-3) Weinstein.

OCC 495, 496 Fieldwork I, II. Supervised field experience applying theoretical concepts in occupational therapy with patients having psychosocial/physical dysfunctions. Prerequisite: all previous required course work. Full-time student status is continued while engaged in fieldwork. WI SP (v-v-1) (v-v-1) Hughes.

OCC 501 Activity Theory and Skills. The focus is on teaching, analysis and therapeutic application of activities. Analysis, history and skills in areas of play/leisure and self-care, homemaking and work and development of skills in performing selected activities are studied in depth. Theoretical constructs which provide the basis for occupational therapy practice are explored. FA (2-4-4) Silerzio, Staff.

OCC 502 Occupational Therapy History and Philosophy. An overview of the historical foundations of occupational therapy as they relate to the frames of reference and theoretical perspectives upon which the field is based. Prerequisites: OCC 461, 501. WI (3-0-3) Jones.

OCC 505 Pathophysiology in Occupational Therapy. Emphasis is on the reasons for breakdown of structure and function, the location of lesions, effects on the bodily systems and the implications of these conditions for the client's lifestyle. WI (3-0-3) Rosenblatt.

OCC 506 Medical Conditions Seminar. A presentation and discussion of selected medical, surgical, neurological and orthopedic conditions with emphasis on their etiology, treatment and prognosis. SP (2-0-2) Opacich.

OCC 510 Special Topics Seminar. Seminars address those nonclinical issues that are dictated by societal events and changes and are integral to the performance of occupational therapists' functions. SP (3-0-3) Silerzio, Weinstein.

OCC 511 Occupational Therapy Intervention I. Students learn theories and conceptual models for intervention in the disease processes of psychosocial disorders which can be applied in medical, educational and community settings. Simulated and actual patient

management issues relative to psychosocial disorders are presented and discussed. Includes preclinical experiences in psychiatric settings. Prerequisites: OCC 465, 502. SP (v-v-6) Rodriguez, Watson.

OCC 512 Occupational Therapy Intervention II. Theories and conceptual models of intervention are presented, based on neurodevelopmental principles of and approaches to occupational therapy evaluation and treatment of individuals with central nervous system disorders. Information is reviewed chronologically across the life span for both acute and chronic conditions. Includes preclinical experiences in selected settings. Prerequisite: OCC 511. FA (v-v-6) Rosenblatt.

OCC 513 Occupational Therapy Intervention III. Theories and conceptual models of intervention are presented, based on biomedical principles and approaches of occupational therapy evaluation and on the treatment of physically disabled individuals. Information is reviewed chronologically across the life span for both acute and chronic conditions. Includes preclinical experience in selected settings. Prerequisites: OCC 463, 502, 506, 541; NEU 501. SU (v-v-6) Rosenblatt.

OCC 514 Occupational Therapy Intervention IV. An exploration of specific issues, problems, and concerns revolving around patient care in community based centers for pediatric and geriatric populations. Includes advanced practicum in selected settings. Prerequisites: OCC 511, 513. SU (v-v-4) Rosenblatt.

OCC 521 Etiology of Occupation. A critical review of theories and practices of occupational therapy with projection of future models of practice. Includes examination of scientific knowledge, models of health care, sociological features of occupational therapy practice and the study of human occupation and its description in illness. Prerequisite: OCC 502. SU (4-0-4) Novak.

OCC 531 Principles and Methods of Education. An exploration of the use of behavioral objectives, taxonomical levels of learning and the application of classical and contemporary theories. A variety of media and techniques to enhance clinical and classroom teaching will be emphasized. SU (2-0-2) Hughes.

OCC 533 Principles and Methods of Supervision. Introduction to the supervisory process based on principles related to education, interpersonal processes, and management. Prerequisite: OCC 531. Corequisite: OCC 545. FA (2-0-2) Hughes.

OCC 535 Issues and Perspectives in the Treatment of Children. (3-0-3)

OCC 541 Tests and Measurement in Occupational Therapy. Administration, scoring, interpretation, and reporting of selected tests and informal assessments useful in an occupational therapy evaluation of clients of varying ages and disability. Prerequisite: OCC 502. SP (4-0-4) Opacich.

OCC 545 Management Issues in Occupational Therapy. Exploration and involvement in administrative

activities related to effective delivery of occupational therapy services; includes budgeting, personnel policies and long- and short-term program planning. Prerequisites: organizational behavior course, OCC 521. FA (2-0-2) Novak.

OCC 582 Application of Computer Technology in Treatment, Management, and Research. An introduction to the computer in which students will apply their computer knowledge to problems and management in clinical areas related to patient treatment, report writing, file/data management, and data analysis. Prerequisite: OCC 512. Corequisite: OCC 545, HCE 581. FA (3) J. Williams.

OCC 585 Research Proposal. Completion of a departmental proposal prior to the implementation of a research project. Prerequisite: OCC 581. SP SU (0-v-3) Hughes, Staff.

OCC 590 Advanced Topics Seminar. Seminars address clinical entities in nontraditional areas of practice and concern of occupational therapy. Prerequisite: OCC 496. SU (2-0-2) Hughes, Staff.

OCC 598 Thesis. Completion of a departmental project, based on the research proposal, for a master's degree thesis relevant to occupational therapy. Prerequisite: OCC 585. SP SU (0-v-3) Hughes, Staff.

OCC 599 Independent Study. Creative project designed by the student and supervised by faculty. (v-v-v)

PATHOLOGY

PTH 501 Pathology I. The general concepts of pathology are studied, with an introduction to degeneration, inflammation, immune response, neoplasia and metabolic and toxic pathological processes. Lectures and seminars are accompanied by laboratory work in the microscopic anatomy of pathological changes. Prerequisites: ANA 451, 472. FA [122 hours] Templeton.

PTH 502 Pathology II. A basic systemized study of human diseases affecting the various organ systems will be presented in lectures, seminars and laboratory sessions. Concepts covered in PTH 501 will be stressed and correlated with the special pathology of organ systems and their functional and structural alterations. Prerequisite: PTH 501. WI [58 hours] Haber, Templeton.

PTH 503 Pathology III. The basic fundamentals of laboratory testing will be presented with emphasis placed on interpretation of tests and the appropriateness of test ordering. Students learn to draw blood and will be expected to perform and interpret a few simple, but diagnostically important, laboratory tests such as urinalysis, hematocrit, and blood smear. No examinations are given in this course, but attendance is required. PTH 502. SPI [45 hours] Haber.

PTH 601 Pathology Clerkship. The primary emphasis is on techniques and procedures used in autopsy pathology performed under the direction of a departmental faculty member. In addition, there is active participation in surgical pathology and departmental conferences. A review of systemic pathology and cytology is provided. Available as a four-week elective only by special arrangement. Prerequisite: MED 601. FA WI SP SU [8 weeks] Weinstein.

PATHOPHYSIOLOGY

PPH 522 Biology of Cancer. Basis concepts of cell biology and biochemistry are introduced with application to the tumor cell. Topics include: mechanisms of carcinogenesis and metastasis, basic and tumor immunology, nutritional aspects of cancer, and hematology. Scientific principles for immunomodulation, radiobiology, and the effect of chemical agents on cell proliferation is included. FA (4-0-4)

PPH 523 Biological Basis of Clinical Therapeutics I. Emphasis is on the pathophysiological basis and meaning of disease processes. The meaning of assessments and therapies related to body regulation of internal cellular environment is studied. Topics include: cells, immune system, muscle, endocrine control of metabolism, reproduction, and the gastrointestinal system. FA (2-0-2)

PPH 524 Biological Basis of Clinical Therapeutics II. Emphasis is on the pathophysiological basis of disease processes. The meaning of assessments and therapies related to body regulation of internal cellular environment is studied. Topics include: pulmonary, cardiovascular, and renal systems, and fluids and electrolytes. WI (2-0-2)

PEDIATRICS

PED 601 Core Clerkship in Pediatrics. The principles and practice of care from birth through adolescence are studied by direct patient contact. The primary objective is to provide an opportunity for students to become proficient in the clinical basis of pediatric diagnosis and therapy. Prerequisite: CCS 502. FA WI SP SU [8 weeks] Gottoff.

PED 603 Introduction to Newborn Medicine. An introduction to the care of newborn infants and mothers, with emphasis on the normal sequence of events in the birth-recovery period, adaptation of baby and mother during the postpartum period and care of the most common complications occurring at this age. Prerequisite: PED 601. FA WI SP SU [4-8 weeks] Meier.

PED 604 Adolescent and Young Adult Medicine. The student is provided with direct experience in the care of inpatients and outpatients. The student is provided experience with disease processes unique to adolescents or manifested differently in this age group as compared to other age groups. Prerequisite: PED 601 or MED 601. FA WI SP SU [4-8 weeks] Strokosch.

PED 608 Behavioral Pediatrics. Students work in both the general pediatric and behavioral consultative setting to improve their understanding of children and families and developing their skills in the area of behavioral pediatrics under direct supervision of the course director. Prerequisite: PED 601. FA WI SP SU [4-8 weeks] Ruchtsmeier.

PED 610 Pediatric Subinternship. An inpatient experience on one of the general units. The subintern will function in a capacity similar to an intern, with supervision by a senior resident and faculty physician. Students are expected to take call every fourth night. Prerequisite: PED 601, fourth year standing. FA WI SP SU [4 weeks] Gotoff.

PED 611 Pediatric Cardiology. Both ambulatory and inpatient experience is obtained in caring for children with heart disease. Correlation of x-ray and electrocardiographic and cardiac catheterization data with physical findings is intensively studied. The student participates in intraoperative and postoperative surgical management. Prerequisite: PED 601. FA WI SP SU [4-8 weeks] Bucheleres.

PED 622 Emergency Pediatrics. At least 30-40 hours per week is involved in supervised direct patient evaluation including daily attendance in the pediatric emergency room and night call responsibility. The student will be required to maintain a log of patients seen and procedures performed, to attend teaching conferences given by a pediatrician, and to attend the didactic lecture on a suitable topic at one of the emergency pediatric conferences. Prerequisite: PED 601. FA WI SP SU [4 weeks] Unfer.

PED 624 Pediatric Critical Care. Emergency medicine is the essence of this course. There is an emphasis on acquiring a wide knowledge of the latest remedies, resourcefulness and a good command of emergency procedures and equipment. Prerequisite: PED 601 and fourth year status. FA WI SP SU [4 weeks] G. Goldman.

PED 626 Pediatric Nephrology. Students gain experience in the care of children with renal problems in hospitalized and ambulatory patients. Emphasis will be on active consulting service in regard to normal and abnormal renal functions, electrolyte imbalances, proteinuria, hematuria, hypertension, urinary tract infections and developmental diseases of the kidney. Prerequisite: PED 601. FA WI SP SU [4 weeks] Gottoff.

PED 631 Pediatric Radiology. Students observe radiologic procedures and participate in analyses, reviews, and general radiology conferences. Analysis involves assessment of appropriateness of an examination, detection of pertinent findings, interpretation of findings and synthesis of interpretation and clinical presentation into reasonable diagnosis. Prerequisite: PED 601. FA WI SP SU [4-8 weeks] Han.

PED 641 Pediatric Allergy/Clinical Immunology. The clinical approach to the problems of allergy and immunology in children and adults is studied. Special

studies of acute and chronic respiratory tract and dermatologic conditions are emphasized. Patients with circulating and cellular antibody disorders are investigated. The inpatient and outpatient facilities of the Medical Center are used. Prerequisite: PED 601. FA WI SP SU [4-12 weeks] Chudwin.

PED 642 Pediatric Hematology/Oncology. An introduction to the care of children with a variety of hematologic disorders or malignancies of childhood. Students will attend consultations with radiologists, pathologists, and surgeons involved in the diagnosis of malignant diseases. Daily ward rounds for inpatients are required as well as outpatient clinics which are held three half-days a week. Prerequisite: PED 601. FA WI SP SU [4-8 weeks] Green.

PED 646 Pediatric Infectious Diseases. The focus is on clinical and laboratory evaluation of pediatric infections. Correct use of laboratory facilities is stressed. Pathophysiology of infectious diseases, differential diagnosis and antibiotic use are discussed on daily ward rounds and weekly conferences. Prerequisite: PED 601. FA WI SP SU [4 weeks]

PED 651 Pediatric Neurology. An advanced clinical experience focusing on neurological problems in the pediatric population. Prerequisite: PED 601. FA WI SP SU [4 weeks] Heydemann, Boyer.

PHARMACOLOGY

PHR 301 Introduction to Pharmacology. Basic concepts in pharmacology focusing on drug actions, reactions, and interaction. (3-0-3)

PHR 501 Medical Pharmacology I. Introduction to the physiochemical factors governing drug receptor actions and the major areas of autonomic, neuropharmacology and psychopharmacology. Prerequisites: BCH 473, NEU 451, PHY 452. FA (4-1-4) [53 hours] Moon.

PHR 502 Medical Pharmacology II. Topics include anesthetic agents, analgesics, sedatives and hypnotics, cardiovascular and respiratory agents, diuretics, hypoglycemic agents, drugs acting on the blood and blood-forming organs and toxicology. Prerequisite: PHR 501. WI (4-1-4) [37 hours] Moon.

PHR 503 Medical Pharmacology III. The pharmacology of antibiotics and cancer chemotherapeutic agents. Prerequisite: PHR 502. SP (2-0-2) [21 hours] Moon.

PHR 521 Laboratory Instrumentation. The course covers the principles and applications of experimental equipment. Instrumentation will include: ultraviolet and visible spectrophotometry, spectrophotofluorometry, thin-layer chromatography, column chromatography, high pressure liquid chromatography, atomic absorption, liquid scintillation spectrometry, isotope use and handling, pH adjustment, sample weighing, melting point determination, hematocrit determination, centrifugation and glassware cleaning. SP (0-6-3) Parkhurst.

PHR 541 Pharmacology. Drug interaction with body tissues, including absorption, distribution, metabolism and excretion is studied. Biochemical and physiologic mechanisms of drug action are discussed. W (2-0-2) Nora.

PHR 542 Pharmacotherapeutics. The use of drugs in the diagnosis, prevention, and treatment of disease is presented. SP (1 to 6 credits) Nora.

PHR 551 Pharmacokinetics. Basic principles of the dynamics of absorption, distribution and elimination under normal conditions and of selected disease states are presented. Prerequisite: PHR 503. WI (3-0-3) Nora, Parkhurst.

PHR 590 Special Topics in Pharmacology. The course is designed to allow the student flexibility in independently pursuing a particular area of interest. May be taken for one or more terms. (v-v-v) Staff.

PHR 591 Advanced Topics in Pharmacology. A series of faculty and student presentations and discussions addressing any advanced topic related to pharmacology. FA WI SP (2-0-2) Prancan.

PHR 598 Research in Pharmacology. By special arrangement. (v) Prancan.

PHR 599 Independent Study. (v)

PHR 611 Neuropharmacology I. A seminar course presenting both preclinical and clinical aspects of drugs used in the treatment of neurologic and psychiatric disorders. Prerequisite: PHR 503. FA (3-0-3) Klawans.

PHR 612 Neuropharmacology II. Continuation of PHR 611. WI (3-0-3) Klawans.

PHR 613 Neuropharmacology III. Continuation of PHR 612. SP (3-0-3) Klawans.

PHR 622 Experimental Models in Pharmacology. A laboratory course concerned with the techniques involved in preparing experimental animal and tissue models for research. SP (0-8-4) Boyd, Prancan.

PHR 631 Clinical Pharmacology and Therapeutics. A study of the integration of clinical work with therapeutic aspects of pharmacology including discussion of the pharmacology, clinical pharmacology, therapeutics and clinical applications for major drug groups. Prerequisite: PHR 503. (4-0-4) MacLeod.

PHR 691 Pharmacology Seminar. FA WI SP (1-0-1) Nora.

PHR 699 Dissertation Research.(v)

PHYSIOLOGY

PHY 451 Physiology I. A comprehensive physiology course which deals with essentially all of the major organ

systems except the CNS. Concept formation and problem solving are stressed. Lectures are supplemented by small group discussions and laboratory exercises. Students are expected to discuss assigned study questions in the group discussions. Laboratory exercises are divided between conventional experiments and computer simulations of physiological systems. FA (4-2-5) [60 hours] Rovick.

PHY 452 Physiology II. Continuation of PHY 451. Prerequisite: PHY 451. WI (5-2-5) [61 hours] Rovick.

PHY 502 Introductory Membrane Biophysics. Study of fundamental processes involved in movement of ions across membranes, excitability in nerve and muscle, equivalent circuit analysis, artificial membrane systems, structure of membranes and active transport processes. (4-0-4)

PHY 503 Physiology of Striated Muscle. Topics include fundamentals of excitation-contraction coupling, mechanics of muscle, equivalent circuit analysis, muscle biochemistry and developmental aspects of nerve and muscle. (4-0-4) Donaldson.

PHY 504 Neurophysiology. This course presents a conceptual approach to the understanding of CNS functions. Discussion includes normal function and selected areas of pathology and current research. A one-hour student presentation is required. SP (2-0-2)

PHY 513 Cardiovascular Physiology. Students will read and discuss the original papers that form the foundation for our current understanding of heart function and control, peripheral vascular control and transcapillary exchange. The works will be evaluated in terms of their significance at the time and their present relevance. (4-0-4) Rovick.

PHY 514 Functional Neurophysiology. An examination of physiology of neurons and glia, synaptic processes, sensory receptor physiology, spinal cord, cerebellum and motor control, peripheral mechanisms in sensory systems and higher functions of the nervous system. Relevant neuroanatomical concepts will be included. SP (4-2-4) Staff.

PHY 523 Circuit Theory and Practical Design. A tutorial laboratory course designed to acquaint the student with the principles of design and construction of various electronic equipment commonly encountered in modern physiology. (3-2-4) Guiffre.

PHY 524 Linear Differential Equations and Transform Methods. Study of first and higher order linear equation, linear algebra techniques, finite difference equations, Fourier series and transforms, Laplace transforms and applications to solution of differential equations. (4-0-4)

PHY 525 Linear Systems Analysis. Topics include block diagrams, feedback, frequency domain analysis, noise and its analysis and partial differential equations and their solution. Prerequisite: PHY 524. (4-0-4) Mathias.

PHY 531, 532 Physiological Modeling I, II. This course covers control theory, the human motor system and feedback interactions in the human motor system. SU FA (4-0-4) (4-0-4) Gottlieb.

PHY 555 Physiology of Cellular Homeostasis I. Integrated physiological content related to cellular homeostasis/viability in humans is presented. Focus is on those selected aspects of cardiovascular, nervous, muscle, hormonal and reproduction, and gastrointestinal systems that account for regulation of cellular fluid, electrolyte and energy/thermal balances. FA (3-0-3)

PHY 556 Physiology of Cellular Homeostasis II. Integrated physiological content related to cellular homeostasis/viability in humans is presented. Focus is on those selected aspects of pulmonary, cardiovascular and renal systems that account for regulation of cellular fluid, electrolyte and energy/thermal balances. WI (3-0-3)

PHY 590 Special Topics in Physiology. An advanced course dealing with selected topics in physiology. The particular subjects vary from year to year. (v)

PHY 598 Introduction to Research. A tutorial course designed to familiarize students with the literature and techniques applicable to modern physiological research. FA WI SP SU (v-v-v)

PHY 640 Applied Electrophysiology. An advanced laboratory course introducing students to the basic techniques of modern electrophysiology. Prerequisites: PHY 502, 503, 523. (3-6-6) Staff.

PHY 641 Molecular Mechanisms in Control of Ion Permeability. An advanced course dealing with special topics in the molecular control of excitability and laboratory instruction in voltage clamp techniques. Offered alternate years by arrangement. Prerequisite: PHY 502. (4-0-4) Schauf, Cohen.

PHY 651 Advanced Topics in Muscle Physiology. Topics include equivalent circuit of skeletal muscle, problems in excitation-contraction coupling and molecular events in the generation of mechanical force. Prerequisite: PHY 503. (4-0-4) Donaldson, Eisenberg.

PHY 653 Problems in Synaptic Physiology. A detailed review of current experimental and theoretical problems in transmitter release and activation of postsynaptic receptors. Prerequisites: PHY 451, 503, 514. (4-0-4) Nelson.

PHY 655 Sensory Neurophysiology. An advanced tutorial dealing with the function of sensory systems and information processing. Prerequisite: PHY 514. (4-0-4) Hoeppner.

PHY 656 Neural Correlates of Behavior. An advanced tutorial dealing with the organization of simple invertebrate nervous systems and the relation between electrical properties of its elements and its behavior. Prerequisites: PHY 514, 655. Alt. SP (4-0-4) Michael.

PHY 690 Research Topics in Physiology. With a member of the staff, the student participates in a laboratory-based experience in an area of current research. The level of participation depends on the student's background and will include examination of the literature, a review of the topics being investigated and opportunities to participate in experimental work. In addition to work in the laboratories, independent experimental or bibliographic projects may be undertaken with the approval of a faculty member. A report is prepared describing the work attempted and accomplished. Prerequisite: PHY 452. SP SU [8 weeks] Schauf.

PHY 699 Dissertation

Research. Postcandidacy research by arrangement with staff. FA WI SP SU (v-v-v)

PREVENTIVE MEDICINE

PVM 452 Preventive Medicine I: Biostatistics. A basic introduction for the medical students to the principles and methods of epidemiology and biostatistics. Topics include the following: the calculation of rates; incidence and prevalence; sensitivity and specificity in screening; calculation of risk and its significance; study designs; comparative analysis; sampling; tests of significance and correlations. At the completion of the course, the student should be able to critically appraise articles in the clinical research journals. FA [12 hours] Norusis.

PVM 453 Preventive Medicine II: Biostatistics. The medical student is introduced to the concept of community health by visiting some public health and community-based primary care programs operating in the Chicago areas. Three days are devoted to field trip activities that illustrate the major concepts and techniques of community medicine. All students spend one day visiting patients with home health care nursing staff. SP [3 days field experience; 18 hours] Hall.

PVM 503 Preventive Medicine III: Community Health. This overview course provides the medical student with current factual information about disease mortality and morbidity rates; changing demographic and epidemiological trends and specific elements of the health care system such as manpower, facilities, services, utilization patterns and costs and financing. Additionally, it offers some perspectives on the changing health of the nation with special attention to disease prevention and health promotion as they apply to meeting the Surgeon General's goals for 1990. FA [16 hours] Eckenfels.

PVM 504 Preventive Medicine IV: Study Groups in Preventive Medicine. Study groups on special topics in preventive medicine and community health (e.g., health and poverty, preventive nutrition, occupational health) with assigned tutors are arranged so medical students have an opportunity to study a topic of their interest in depth. Classroom size is kept small (10-15) to promote open discussion. WI [8 hours] Assigned tutors.

PVM 541 Biostatistics I. A basic introduction to the use of statistics in the health sciences. Topics covered

include: descriptive statistics, probability, sampling, estimation, t- and Z-tests, chi-square tests, one-way analysis of variance and nonparametric statistics. Students will do some statistical computations on the computer. FA (4-0-4) Norusis, Shott.

PVM 542 Biostatistics II. An extensive introduction to regression, two-way analysis of variance and analysis of covariance. Regression topics covered include dummy variable, transformations, stepwise regression and residual analysis. Most of the analysis will be done using computer programs. Prerequisite: PVM 541. WI (3-0-3) Norusis, Shott.

PVM 543 Biostatistics III. An introduction to multivariate statistical techniques, including factor analysis, discriminant analysis, multivariate analysis of variance, loglinear analysis and cluster analysis. Extensive use will be made of computer programs. Prerequisite: PVM 542. SP (3-0-3) Norusis, Shott.

PVM 599 Independent Study. Advanced topics by arrangement with instructor. (v)

PVM 601 Primary Care. Ambulatory care in a physician's office is the basis for this clerkship. Emphasis is on preventive measures and follow-up care. By individual arrangement, experience is available in a variety of settings, such as group practice, inner city clinics or rural practice. Experience in foreign countries can also be arranged. Prerequisite: CCS 502. FA WI SP SU [4-12 weeks] Schoenberger.

PVM 603 Occupational Medicine. This experience provides a combination of didactic and practical work in approaching the problems of health maintenance and environmental hazards in diverse industrial settings. Prerequisite: MED 601. FA WI SP SU [8 weeks] Kassriel.

PVM 604 Field Experience in Epidemiology. Emphasis is placed on the collection and analysis of data obtained in epidemiologic studies. The student may select a project and is expected to become familiar with field epidemiologic techniques and tools, including questionnaire design and interviewing. Primary focus is on studies of cardiovascular disease, with special emphasis on the control of hypertension and prevention of cardiac disease. Prerequisite: CCS 502. FA WI SP SU [12 weeks] Schoenberger.

PVM 605 Research Studies in Health Care Delivery. Under supervision, the student undertakes research on problems in health care delivery. The models available in the Medical Center are utilized primarily, but other systems may be studied by arrangement. Such areas as health evaluation programs, the use of paramedical personnel, medical audit and emergency room care are available. Prerequisite: CCS 502. FA WI SP SU [8 weeks] Schoenberger.

PSYCHIATRY

PSY 501 Introduction to Psychopathology. A study of the range of psychopathology that will be manifested in

clinical situations. By reviewing diagnostic criteria and by studying etiological factors underlying various forms of psychopathology that range from disturbances in cellular and neurotransmitter function through psychological and social stresses, students develop a basic understanding of common psychiatric conditions. Prerequisite: BHV 453. FA (3) [33 hours] Zadylak.

PSY 601 Core Clerkship in Psychiatry. Basic clinical and didactic exposure to the major psychiatric disorders focusing on their diagnosis and management. Emphasis is placed on aspects of psychiatry relevant to the primary practitioner with a holistic approach to patient care recognizing the significant biological, psychological, and social/environmental factors contributing to the patient's illness. Systems concepts of care are presented in an integrated manner through graded, intensive, clinical experiences. Inpatient settings are used for assignment of patient responsibility. Prerequisite: CCS 502. FA WI SP SU [6 weeks] Bloom.

PSY 602 Psychosomatic Medicine. The relationship between internal and external stress and the development of physical symptomatology as well as therapeutic interventions are studied. Adults and children hospitalized on medical, surgical, obstetric or pediatric services are studied with supervised diagnostic evaluation and continuing management. The role of the milieu--home, community and hospital--is emphasized. Special work is done with dialysis patients, transplant patients, patients with malignancies and those undergoing intensive care. Prerequisite: PSY 601. FA WI SP SU [4-6 weeks] S. Cavanaugh.

PSY 603 Child Psychiatry. Students will be assigned specific children to follow under the supervision of the attending child psychiatrist and will participate in treatment groups and team management. Students will work with the treatment teams of the childpsychiatric inpatient unit, the day school and partial hospitalization program, and consult-liarson with pediatrics and outpatient services. Prerequisite: PSY 601. FA WI SP SU [4 weeks] Poznanski.

PSY 604 Adult Psychiatry. The objective is to increase the student's knowledge of various psychiatric disorders and to improve knowledge and skills in drug therapy, individual psychotherapy, family therapy and group therapy. Emphasis is placed on crisis management and brief therapy in inpatient settings. Prerequisite: PSY 601. FA WI SP SU [4-8 weeks] Bagri, Corbett.

PSY 605 Geriatric Psychiatry. The focus is to increase the amount of experience in treating elderly patients with psychiatric presentations superimposed on medical problems, to improve psychiatric diagnostic skills and uses of psychotherapy and pharmacotherapy with elderly patients, and to learn more about psychological changes that accompany the aging process. Also students will become familiar with normal and abnormal states and processes with the elderly by means of: readings in the field of Geriatric Psychiatry, direct treatment of select patients with supervision by attending psychiatrists, fellows, and residents on rotation. Prerequisite: PSY 601 FA WI SP SU [4 weeks] Ripecky.

PSY 611 Dissociative Disorders. Students attend sessions with dissociative disorders patients for assessment and treatment purposes on the Dissociative Disorders Unit at Sheridan Road Hospital. The clerkship may be tailored to the specific needs and interests of the student who follow one to two patients for the entire rotation. A self-evaluation on the general knowledge component will be supplied at the beginning of the rotation to assist in providing some focus for the study of this area of psychiatry. Students are evaluated on the basis of attendance, attitude, and general knowledge of dissociative disorders gained during the rotation. Interview with a course director is required to enroll in clerkship. Prerequisite: PSY 601 FA WI SP SU [4 weeks] Braun, Sachs.

PSY 621 Outpatient Psychiatry. The focus is to develop diagnostic and treatment planning skills for outpatients, to learn and implement brief and intermediate length psychotherapeutic interventions, and to develop knowledge and skills in psychopharmacologic treatment of outpatients. Students will increase their awareness of themselves as clinicians and the importance of transference and countertransference in the care of patients through intensive individual supervision from faculty and residents. Attendance will be required at diagnostic treatment conferences and advanced courses in psychotherapy and pharmacology. Prerequisite: PSY 601 FA WI SP SU [4-12 weeks] Fink.

PSY 651 Substance Abuse. Students will learn to recognize, appropriately evaluate and treat patients with substance abuse disorders in inpatient and outpatient settings, to become familiar with detoxification and medical complication of substance abuse, and to learn the role of the physician in working with other substance abuse professionals. Reading of pertinent literature required. Supervised management of patients with substance abuse disorders. Prerequisite: PSY 601 FA WI SP SU [4 weeks] Tilkin.

PSYCHOLOGY

NOTE: Courses numbered 550 and above require admission to the graduate program in psychology and permission of the program director.

PSC 501 Psychology of Learning. This course examines basic learning processes from an historical perspective and through problems of current interest. Topics include principles of classical and operant conditioning, discrimination and generalization, the nature of reinforcement, aversive control of behavior, biological constraints on learning and neural substrates of learning and memory. (3)

PSC 505 Biostatistics I. Same as PVM 541. (4-0-4)

PSC 506 Biostatistics II. Same as PVM 542. (3-0-3)

PSC 507 Biostatistics III. Same as PVM 543. (3-0-3)

PSC 508 Methods in Behavioral Research. This course examines theory and research methodology as they influence the formulation of hypotheses and research designs in behavioral, social and clinical research. Prerequisite: PSC 507. (3)

PSC 521 Biological Bases of Behavior. An examination of the neural substrates of behavior. Topics include synaptic transmission and patterns of neural activity, sensory and motor processes, sleep and arousal and emotion and motivation. (3)

PSC 522 Psychophysiology. Evaluation of psychological processes by means of physiological responses. Methodology and empirical data in the psychophysiological analysis of attention, perception, learning and memory. Critical analysis of nervous system organization and responsiveness to acute stress and to chronic dysfunction. Prerequisites: PSC 501, 521. (3)

PSC 531 Developmental Psychology I: Infancy through Adolescence. The first of a two-course sequence on the normative processes of behavioral change across the life span. Major theories of cognitive, social, personality and emotional development from early infancy through adolescence are presented. Methodological issues are studied in the context of current and classical research findings. (3)

PSC 532 Developmental Psychology II: Adulthood and Aging. A continuation of PSC 531. Survey of current research and theory in development throughout adulthood. Empirical data concerning the influence of biological changes, social factors, cognitive processes and mental and physical health on adult development are reviewed. Prerequisite: PSC 531 (3-0-3)

PSC 534 Developmental Psychobiology. Brain-behavior relationships from infancy through puberty. Emphasis is placed on animal models and/or neurobehavioral analyses of attention disorders, hyperactivity, retardation, aggression/dominance, autism, etc. The anatomical, neurophysiological and behavioral components of brain development and brain damage are examined throughout the early developmental period. Prerequisites: PSC 501, 521. (3)

PSC 536 Psychology of Aging. An advanced analysis of the psychology of aging, with consideration of biological and psychosocial factors affecting developmental changes in late adulthood. Topics include methodological issues in research, cognitive processes, personality, psychopathology and the influence of health and illness on aging and behavior. Prerequisite: PSC 532. (3)

PSC 541 Theories in Social Psychology. Theoretical approaches to the study of social interaction. Analysis of individual, group and collective behavior from both psychological and sociological perspectives. Topics include general theories and methods, empirical data on attribution and social perception, attitude formation and change, conformity, small groups and collective behavior/mass movements. (3)

PSC 542 Social Bases of Behavior. Examination of family, small group, and social networks as determinants of behavior and as environments within which behavior occurs. Includes theory and processes of role allocation, dyad and triad formation, coalitions and conflict. (3)

PSC 543 Topics in Medical Sociology. Review of current topics which are announced each term. May be repeated. (1-3)

PSC 545 Health and Illness Behavior. Empirical review of concepts basic to the understanding of health and illness behavior, emphasizing a multidimensional model. (3)

PSC 551 Theories of Personality. An examination of the major traditions in personality theory and research: psychoanalytic, trait, social learning and phenomenological. Empirical research relating to personality consistency and behavioral specificity is reviewed. (3)

PSC 548 Program Evaluation. Theory and practice of program evaluation in health care settings. Topics include the uses of evaluation in health service organizations, methodological issues in program assessment and problems encountered in communication and implementation of evaluation findings. Prerequisites: PSC 507, 541. (3)

PSC 553 Psychopathology. Description of psychopathology, with review of defining signs and symptoms in children and adults. The interplay of social, learning and physiological factors in the etiology of behavioral disorders is considered. Prerequisites: PSC 532, 551. (3)

PSC 554 Behavior Disorders in Children. Major behavioral disturbances of childhood and their relationship to psychological theories and research. Prerequisite: PSC 553. (3)

PSC 557 Human Neuropsychology. Consideration of complex psychological functions as they relate to the human central nervous system. Topics include attention, emotion and motivation, perception, psychomotor behavior, language, memory and problem solving. Empirical data concerning cerebral localization, asymmetry of function and cerebral plasticity are reviewed. Prerequisite: PSC 521. (3)

PSC 558 Psychology of Sleep. Major theories of mental activity during sleep, including a critical analysis of the relationship between neurophysiological activity and psychological activity during sleep and the interaction between sleeping and waking. Methodological approaches to dream content analysis and to the study of dream function are considered. Prerequisite: PSC 521. (3)

PSC 571 Principles of Psychotherapy. An introduction to verbal psychotherapy. Survey and analysis of techniques in psychoanalytic and neoanalytic, client-centered and cognitive psychotherapy. Prerequisite: PSC 551. (3)

PSC 572 Principles of Behavior Change. An overview of theoretical approaches, empirical studies, and practical issues in the field of behavioral assessment and intervention. Behavioral observation, principles of behavioral management and cognitive restructuring. Prerequisite: PSC 501. (3)

PSC 575 Assessment of Intelligence. Examination of theoretical and practical issues in the measurement of intelligence. Topics include the nature of intelligence, the construction and use of intelligence tests, administration of standardized tests and analysis and presentation of test data. Lecture and laboratory. (3)

PSC 576 Assessment of Personality. Historical and theoretical issues in projective and objective personality assessment. Methodological issues involving empirical vs. rational test construction, clinical vs. actuarial prediction, response styles, etc., are considered. Lecture and laboratory. (3)

PSC 581 Directed Research. Individual projects (nondissertation research) under the supervision of a faculty member. Arranged by consultation with the program director. (1-6)

PSC 590 Special Topics in Psychology. Advanced topics selected for examination and discussion. Topics vary from term to term. (1-3)

PSC 599 Directed Readings. Readings in a topic area of particular interest under the direction of a faculty member. Arranged by consultation with the program director. (1 to 3)

PSC 605 Professional Issues. Topics of professional concern in health psychology. (3)

PSC 611, 612, 613 Practicum in Assessment and Intervention Skills I, II, III. A three-quarter sequence of supervised experience in assessment and intervention. This practicum involves experience in a variety of psychotherapeutic techniques. Students are supervised in the administration, scoring and interpretation of intelligence and personality tests, including the Wechsler Intelligence Scale, Stanford-Binet, MMPI, TAT and Rorschach. (2) (2) (2)

PSC 616, 617, 618 Practicum in General Clinical Psychology I, II, III. A three-quarter sequence of supervised experience with both children and adults. The practicum integrates clinical course content with the evaluation and management of behavioral and emotional problems in diverse patient populations. Prerequisite: PSC 613. (3) (3) (3)

PSC 621 Clinical Health Psychology. An examination of psychological processes as they relate to the diagnosis and treatment of physical disease. Prerequisite: PSC 553. (3)

PSC 622 Advanced Psychotherapy. Prerequisite: PSC 571. (3)

PSC 623 Advanced Behavioral Interventions. Prerequisite: PSC 572. (3)

PSC 625 Advanced Rorschach Interpretation. Theory of the Rorschach projective process and the administration, scoring and interpretation of test protocols. Issues covered are norms, reliability, personality description, diagnosis of psychopathology and use in planning treatment. Prerequisites: PSC 553, 576. (3)

PSC 629 Practicum in Clinical Health Psychology. Intensive, supervised experience with adult medical populations. Emphasis is given to the evaluation of medically related problems from a psychological perspective, and the development of integrated, comprehensive treatment plans. May be repeated to a maximum of six credits. Prerequisite: PSC 617. (3)

PSC 631 Pediatric Psychology. Principles of clinical health psychology as they apply to children and adolescents. Intervention methods appropriate to children in inpatient settings are emphasized. Prerequisite: PSC 553. (3)

PSC 633 Assessment in Pediatric Psychology. Theoretical and practical issues in the assessment of individuals aged 3-16. Emphasis is given to assessment, recommendations for treatment/intervention and consultation with parents, medical and professional staff. Lecture and laboratory. Prerequisites: PSC 575, 576. (3)

PSC 639 Practicum in Pediatric Psychology. Intensive, supervised experience in a variety of diagnostic and intervention techniques appropriate to pediatric populations. May be repeated to a maximum of six credits. Prerequisite: PSC 618. (3)

PSC 641 Clinical Neuropsychology. Systematic analysis of behavioral disturbances associated with disease, injury and/or functional alteration of the central nervous system; behavioral manifestations associated with specific neurological syndromes and diseases. Prerequisite: PSC 557. (3)

PSC 643 Assessment in Clinical Neuropsychology. Rationale, procedures and substantive content of neuropsychological consultation. Selection and administration of appropriate assessment procedures, evaluation and integration of data, formulation of treatment and management recommendations and consultation with physicians and other health professionals are considered. Lecture and laboratory. Prerequisites: PSC 557, 575, 576. (3)

PSC 649 Practicum in Clinical Neuropsychology. Supervised experience in neuropsychological assessment and consultation. May be repeated to a maximum of six credits. Prerequisite: PSC 617. (v)

PSC 651 Clinical Sleep Disorders. Diagnosis and treatment of sleep and arousal disorders as recognized by the Association of Sleep Disorders Centers. Major diagnostic categories are reviewed in terms of clinical presentation, etiology, laboratory findings and potential therapies. Lecture and laboratory. Prerequisite: PSC 558. (3) [2-4 weeks for medical students]

PSC 659 Practicum in Clinical Sleep Disorders. Supervised experience in the sleep disorders service: patient interviews, sleep assessments, laboratory evaluation and case presentations. May be repeated to a maximum of six credits. Prerequisite: PSC 558. (3)

PSC 669 Advanced Practicum. Practicum experience in the field of a student's special interest. Arranged by consultation with the program director. (v)

PSC 681 Directed Research. Individual projects (nondissertation research) under the supervision of a faculty member. Arranged by consultation with the program director. (v)

PSC 699 Dissertation Research. (3-12 credits per quarter)

PSC 700 Internship. (Noncredit)

RADIOLOGY

RAD 601 Diagnostic Radiology. Basic radiologic principles are demonstrated and the role of diagnostic radiology as a clinical setting for patient care and medical and surgical specialty consultations is emphasized. Students prepare one case for the teaching file and gives one oral presentation to the course director. There is a special lecture series covering unknown cases; teaching conferences, assigned readings, teaching tapes to review, and a written final examination. Prerequisites: MED 601, SUR 601. FA WI SP SU not in May, June or July [4 weeks] C. Smith.

RAD 606 Nuclear Medicine. All facets of the disciplines of nuclear medicine are studied, with particular emphasis on radionuclide scanning of organ systems for diagnostic and research purposes. Emphasis is on pathophysiologic correlation and case study. Literature review and individual topics are encouraged to provide in-depth study in the broad field of nuclear medicine. Prerequisite: MED 601. FA WI SP SU [2-4 weeks] Fordham.

RAD 611 Interventional Radiology. Patient care is emphasized as both non-vascular as well as vascular interventional examinations are performed on both inpatients and outpatients. Students will have assigned readings and will be able to attend lectures given by the Diagnostic Radiology attending staff and residents included in RAD 601. Not offered in June, July or December. Prerequisite: RAD 601. FA WI SP SU [4 weeks] Matalon.

RAD 612 Correlative Imaging. This clerkship exposes the student to ultrasound, computed tomography and magnetic resonance imaging with emphasis on correlation of radiologic findings. Students will be assigned reading and spend time in each of the various imaging sections in the Radiology Department working with attending physicians and residents. Not offered in June, July or December. Prerequisite: RAD 601. FA WI SP SU [4 weeks] Silver.

RAD 621 Radiation Oncology. The student will participate in the normal activities of the department including consultations, treatment planning, and follow-up care of cancer patients. Students are assigned to two different services allowing exposure to different cancer sites. FA WI SP SU [2-4 weeks] Phillips.

RELIGION AND HEALTH

REL 451 Introduction to Religion. This course will examine religion in human experience as the use of ritual, symbol and story linking human needs with the ultimate and the sacred; as means, end and quest; as marker of passages in the life cycle and as help and hindrance in sickness, suffering and death. (2-0-2)

REL 452 Bioethics in Health Care. This interdisciplinary course considers representative ethical issues in health care; paternalism vs. the enhancement of patients' autonomy as a perspective around which to organize health care; principles of ethical decision making in health care and specific issues, such as abortion, treatment of the dying, allocation of resources and religious and other societal factors that can lead to ethical dilemmas. (2-0-2)

REL 453 Illness and Faith. An examination of patients' understanding of body, time, shame, community, the self-sacrifice and suffering, religious resources and the relationship between God and illness in light of their faith. Employs seminar method and some clinical materials. (2-0-2)

REL 464 Death and Dying. An examination of the issues that dying persons face and the ways that they face them. Instructive stories of dying persons, their families and those who take care of them are studied. A careful comparison of the stage theory and the continuity theory of dying is made. The awareness of dying, truth telling, responsibilities to the dying, times and places of dying and suicide are addressed. (2-0-2)

REL 465 Death and Dying in Literature. Drawing on classical and contemporary literature, this course will consider various portrayals of death, dying and bereavement; the meanings of death in the life of the family and the society and themes of pain, suffering, courage, resolutions of conflict and life in the face of death. (2-0-2)

REL 524 Healing Women and the Health Care System. An examination of the issues related to the assessment of women as patients and as caregivers, how the assessment influences goals and approaches to patient and family care, the historical impact of women on the health care of the nation, and their impact on today's health care system. The purpose of the course is to provide each of its participants with a fuller understanding of gender differences so that the care offered to and by them may contribute to greater wholeness and healing. (2-0-2)

REL 531 The Clinic and Ethical Classics. By permission of instructor. (3-0-3)

REL 576 Values and Power: Ethics for Health Care Managers. This course will consider questions, such as the following: What is ethics? What are the basic ethical questions that health care managers will encounter? What are the ethical responsibilities of the health care administrator? What are the health care managers' responsibilities for providing an environment in which others can examine their ethical responsibilities? (3-0-3)

REL 623 Vital Themes in Religion and Health. Presentations by professionals from other disciplines, by religion and health faculty and by students attempt to bring theoretical material to bear on the practical work of ministry and to help students clarify their operational concepts. In the past, this course has included the following:

Suffering: Its Importance for Health. Philosophical and theological responses to suffering, their expression among hospital patients and their implications for healing.

Aging, Faith and Health. Important biological, psychological and social changes that accompany aging; the role of faith in the life of older persons, particularly in their coping with illness.

Faith as a Factor in Health. Major theories of disease and health, scientific and unscientific, Western and nonWestern; literature on the role of faith, trust and hope in recovery from illness; case examples from students' experience. (v-v-v)

SPEECH AND HEARING SCIENCES

SHS 501, 502 Speech and Hearing Sciences I, II. Normal processes in language, speech, and hearing. Concepts in basic acoustics forms and acoustic phonetics are presented. Theories of hearing, language and speech are considered along with an introduction to psychoacoustics. (3-0-3)

SHS 506 Audiology II. A survey of audiologic tests developed to provide differential diagnosis of auditory pathology. Course content will be applied to students practicum experience. (3-0-3)

SHS 507 Neurological Bases of Speech and Hearing. Central and peripheral nervous system structures which form the neurologic bases for speech, hearing and language are presented. (3-0-3)

SHS 511, 512, 513, 514, 515 Speech-Language Pathology Practicum I, II, III, IV, V. Supervised clinical experience at the Medical Center with persons manifesting communication impairments. Students develop the ability to evaluate, differentially diagnose and formulate treatment programs. Counseling patients presenting with communication impairments is included. Report writing skills are emphasized. SHS 511 also includes a 1 credit module on basic audiological testing. (v-v-v)

SHS 516, 517, 518, 519, 520 Audiology Practicum I, II, III, IV, V. Supervised clinical experience with patients displaying various hearing impairments and disorders. Students develop skills in diagnostic evaluation, case histories, counseling, and treatment for pediatric through geriatric patients. The relationship of audiology to other health care professions is examined. SHS 516 also includes a one credit module on basic audiologic testing. (v-v-v)

SHS 522 Language Disorders in Children. An examination of normal and abnormal language development. Consideration is given to theories of language learning, prerequisites to symbolic communication, normal acquisitions, language analysis procedures, and etiological variables. Methods of language assessment, treatment models, and therapeutic procedures are studied. (3-0-3)

SHS 523 Sign Language. This introduction is designed to develop sign language skills to a beginning level for both expressive and receptive vocabulary. (0-2-2)

SHS 524 Fluency, Dysfluency, and Stuttering. Child and adult fluency disorders will be studied. Students will learn to describe pertinent characteristics of speech fluency, identify the presence of a clinically significant fluency problem, and determine etiologic and maintaining factors. Appropriate management strategies will also be considered. (3-0-3)

SHS 526 Industrial Audiology. An examination of hearing conservation programs in industry and the current regulations governing them. (2-0-2)

SHS 531 Amplification for the Hearing Impaired. The foundation for a working knowledge of hearing aids is laid in this course. A brief historical perspective on amplification is accompanied by an evaluation of the modern hearing aid. This includes a discussion of the variety of aids available, earmold acoustics, design and modifications, selection techniques, In Situ performance and fitting procedures. Electroacoustic analysis and troubleshooting will be covered along with Illinois regulations for dispensing hearing aids. In addition, hearing aid evaluations and fittings for children and assistive listening devices for all ages will be studied. Cochlear implants will be included as part of a discussion on future research. Laboratory participation will include earmold impressions, electroacoustic analysis, earmold modifications, troubleshooting hearing aids and probe microphone measurements. (2-1-3)

SHS 532 Advanced Hearing Aids. An examination of hearing aid dispensing by the audiologist. State and federal regulations, in-the-ear hearing aid modification, marketing techniques, and advanced hearing aid measurements are some of the topics covered. (1-2-3)

SHS 533 Adult Aural Rehabilitation. An examination of adult aural rehabilitation with a historical review of traditional rehabilitation. Visual, auditory, and bi-sensory stimuli in communication are considered along with assessing communicative function, auditory training, speechreading, amplification, assistive listening devices,

and the psychosocial aspects of hearing impairment. The geriatric population and the working-age adult will be considered as separate rehabilitative challenges. (3-0-3)

SHS 534 Pediatric Aural Rehabilitation. An examination of the strategies involved in the management of hearing impaired and deaf children. Topics discussed include parent counseling, auditory training, speech and language training and educational opportunities. Various theoretical models will be covered, and students will receive practice in designing management programs for hearing impaired children and their parents. The audiologist's role in case management will be discussed. (3-0-3)

SHS 542 Electronystagmography. Anatomy and physiology of the vestibular and ocular motor systems will be reviewed. Disorders of patients presenting vertiginous symptoms will be discussed with emphasis on technique and interpretation of ENG findings. Acceleration measurements will be introduced. (3-0-3)

SHS 543 Electrophysiologic Assessment of the Auditory System. A review of the principles and practices of electrophysiologic testing of the auditory system. Electrocochleography, brainstem evoked potentials, and cortical evoked potentials are some of the responses examined. (3-1-4)

SHS 544 Pediatric Audiology. The major etiologies underlying hearing impairments encountered in the pediatric population. Identification programs for neonates and children are discussed. Primary emphasis is placed on pediatric evaluation skills, including differential case history, behavioral observations, and audiologic test procedures. (3-0-3)

SHS 545 Anatomy and Physiology of Speech and Hearing. The neurologic and musculoskeletal bases of both speech and hearing. (3-0-3)

SHS 546 Anatomy and Physiology of Speech and Hearing Lab. The lab section examines the structures important for speech and hearing through the use of cadavers. (0-1-1)

SHS 548 Advanced Electrophysiologic Assessment. A detailed examination of some of the less commonly used clinical evoked potentials. Responses covered include the frequency following response, middle latency response, P300, and visual and somatosensory responses. In addition, new application of standard AEP procedures will be covered. (2-1-3)

SHS 550 Electronystagmography Laboratory. A review of basic technique and practical considerations for performing ENG. (0-1-1)

SHS 551 Diagnostic Methods in Speech-Language Pathology. This course will focus on concepts in educational and psychological testing and measurement. General aspects of the diagnostic evaluation will also be presented. (3-0-3)

SHS 553 Instrumentation for Hearing and Speech. An introduction to instrumentation used in the measurement and treatment of speech and hearing processes. Concepts related to the evaluation of instruments are presented. Calibration procedures are demonstrated. Clinical and research applications are emphasized. (2-1-3)

SHS 556 Swallowing I: Diagnosis. A review of the anatomy and physiology of normal deglutition. Disorders of deglutition, both neuromuscular and post-surgical, will be studied. Bedside and radiographic diagnosis will be covered. (1-0-1)

SHS 557 Swallowing II: Management. A study of the management decisions and therapy techniques for patients with disordered oral feeding due to neuromuscular disorders and post-surgical changes. Medical and surgical treatments will be included. (1-0-1)

SHS 558 Swallowing III: Instrumentation. An overview of study techniques and instrumentation used in assessing swallowing disorders including videofluoroscopy, cineradiography and manometry. (1-0-1)

SHS 561 Articulation Disorders. The focus of this course is on normal and abnormal aspects of speech. Consideration is given to phonetic transcriptions, theories of and prerequisites to speech development, phonological analysis procedures and normal acquisition. Etiological factors related to abnormal articulation are examined. Articulation assessment strategies, treatment models, and remediation procedures are studied. (4-0-4)

SHS 562 Craniofacial Anomalies. An overview of the natural history of cleft palate and other craniofacial anomalies characterized by specific speech problems. The emphasis will be on the development of the multidisciplinary team, speech disorders secondary to these craniofacial anomalies, history of previous care and treatment of persons with these disorders, update on recent research, new treatment developments, and approaches to diagnostic and therapeutic speech intervention. Observation of diagnostic evaluations and treatment planning by a multidisciplinary craniofacial team is included as part of the curriculum. (3-0-3)

SHS 563 Voice Disorders. The assessment and management of voice disorders. Students will acquire skills in identifying various pathologies, forming hypotheses as to etiologic and maintaining factors and implementing management strategies. Various forms of alaryngeal speech will be discussed. The contribution of otolaryngology, neurology, and psychiatry in patient management will also be reviewed. (4-0-4)

SHS 564 Aphasia. Adult onset neurogenic language disorders are examined with emphasis on pathophysiology, symptomology, diagnosis, treatment, and the role of counseling. Theoretical models and past and current controversies will be included. (4-0-4)

SHS 565 Motor Speech Disorders. The identification and management of speech disorders secondary to central and/or peripheral nervous system damage. Topics will include conducting a motor speech exam; components of the various dysarthrias; motoric and linguistic views of apraxia of speech; management. Neural basis of speech production will also be reviewed. (3-0-3)

SHS 566 Pathophysiology of the Auditory System. This course will examine various ear diseases and other pathologies as they affect the auditory system. (3-0-3)

SHS 568 Cognitive Disorders. Current trends in habilitation and rehabilitation of pediatric and adult patients with cognitive disorders will be addressed. The focus will be on the role of the speech language pathologists as a member of the interdisciplinary team. Neuropathologies, diagnostic procedures, recovery models, and treatment methods will be studied. (3-0-3)

SHS 575 Issues in Counseling. The major focus is on understanding the process of the helping relationship. In addition, skills and competencies that interact to influence effectiveness as a communicator will be developed. Knowledge of selected counseling theory as it integrates into practice will be acquired. (3-0-3)

SHS 582 Introduction to Research in Communication Disorders. The development of skills in understanding and critiquing research reports is emphasized. Principles of the scientific method and criteria for evaluating research are studied. Consideration is given to both group and single subject research designs. (4-0-4)

SHS 585 Professional Issues I. An introduction to various health professions in comprehensive patient care with an emphasis on their relationship with speech/language pathology and audiology. (1-0-1)

SHS 586 Professional Issues II. Issues relating to preparation for the paid professional experiences are discussed, including resume writing, interviewing techniques, career planning, certification and accreditation. (1-0-1)

SHS 589 Research Practicum. The development of practical research skill through involvement in a research project. Research methods such as data collection, data analysis, and report writing are emphasized. (1-2-3)

SHS 591 Advanced Clinical Training. Advanced training in speech-language pathology or audiology. (v-v-v)

SHS 595 External Practicum in Audiology. Students are placed at external practicum sites at Rush network hospitals and/or other cooperating institutions or facilities. (v-v-v)

SHS 597 Case Presentation. Students present an interesting clinical case with which they have been involved in management. Each student works with a supervising faculty member in preparing the presentation. (0-1-1)

Course Descriptions

SHS 598 Thesis. Under the guidance and direction of a faculty member and committee, the student originates, proposes, and executes an experiment. Thesis projects must reflect a high degree of scholarship. (v-v-v)

SHS 599 Independent Study. Students pursue in depth an area of their choosing under the direction of a faculty member. (v-v-v)

SURGERY

SUR 601 Core Clerkship in Surgery. Principles of preoperative and postoperative care, diagnosis of surgical disease, indications for surgery and physiological principles of surgery are stressed through the case study method. The clerkship teaches surgical pathophysiology; helps students recognize surgical emergencies and outline their therapy; improves diagnostic ability; encourages use of the library and increases poise in presenting cases. In addition to six weeks of general surgery, the students choose two three-week rotations from available surgical electives to complete the clerkship. Prerequisite: CCS 502. FA WI SP SU [12 weeks] Doolas.

SUR 604 Advanced Surgery Clerkship. The student assumes many of the duties and responsibilities of a resident physician. This includes responsibility for preoperative and postoperative care, participation in surgery, and rotating on-call service. The work is primarily with hospitalized patients, with opportunity for ambulatory and elective surgery. Independent library investigative projects are assigned. Prerequisite: SUR 601. FA WI SP SU [4 weeks] Doolas.

SUR 605 Anesthesiology. Areas covered are c airway management; artificial ventilation with mask and bag; circulatory inadequacy and initial support of the failing circulation; induction of topical and infiltrative anesthesia, and the actions and interactions of depressant and stimulant drugs commonly encountered or used by anesthesiologists. Students participate in preoperative evaluation and preparation of surgical and obstetric patients. Prerequisite: MED 601, SUR 601. FA WI SP SU [4 weeks] Badrinath.

SUR 606 Clinical Transplantation. The clinical aspects of transplantation, including donor and recipient surgery and preoperative and postoperative care are studied. The student participates in organ preservation as well. Seminars on the fundamental and clinical aspects of transplant immunology are held. Prerequisite: SUR 601. FA WI SP SU [4-8 weeks] Merkel.

SUR 611 Cardiovascular Surgery. This course emphasizes the clinical and laboratory diagnosis of cardiac (both congenital and acquired) and vascular disorders considered for surgical management. Indications for surgery, preoperative evaluation and postoperative care are discussed at patient rounds, in conferences and on an individualized basis. Prerequisite: SUR 601, SUR 605. FA WI SP SU [4 weeks] Najafi.

SUR 612 Surgical Intensive Therapy. This rotation exposes the experienced student to comprehensive management of critically ill surgical patients. Application

of life support techniques including vaso-active drugs, mechanical aids to circulation, pacing, counter-shock, and respiratory therapy. Pathophysiologic discussion and integration with cardiopulmonary analysis of data obtained from invasive critical care medicine are emphasized. Radiologic, medical, and surgical aspects of critical care medicine are also incorporated. Prerequisite: SUR 601, SUR 605. FA WI SP SU [4 weeks] Carroll.

SUR 613 Peripheral Vascular Surgery. This course emphasizes the clinical non-invasive laboratory and radiologic disorders considered for surgical management. Indications for surgery, pre-operative evaluation and post-operative care are discussed at patient rounds, in conferences and in the operating room. Prerequisite: SUR 601, SUR 605. FA WI SP SU [4 weeks] DeLaria.

SUR 616 Plastic and Reconstructive Surgery. The basic surgical principles of wound care, wound treatment, and general techniques associated with the treatment of acute trauma, burns, lacerations and blunt trauma are studied. Instruction in the care of acute injury of the hand and basic instruction in the diagnosis and treatment of facial and bone fractures will be included. Experience in suturing animal wounds, actual surgical technique, and emergency room experience are included. Prerequisite: SUR 601. FA WI SP SU [4-8 weeks] Curtin.

SUR 626 Principles of Urology. This clerkship provides further experience in the diagnosis and management of urological problems as a supplement to the basic clerkship in surgery. Prerequisite: SUR 601. FA WI SP SU [4 weeks] McKiel.

SUR 627 Genitourinary Neoplasia. The basic concepts of neoplasia, using the genitourinary neoplasms as models, are presented. These neoplasms have been selected because, collectively, they span the entire spectrum of malignancy. The student actively participates in the management of both hospitalized and ambulatory patients. Multidisciplinary seminars and individual projects are available. Departmental approval required. Prerequisite: SUR 601. FA WI SP SU [4 weeks] Flanagan.

SUR 641 Orthopedic Sports Medicine. The basic principles of physical examination, non-operative and operative treatment and rehabilitation of sports-related injuries. Clinical exposure includes participation in office hours, patient evaluation and hospital care, high school game and sports event coverage with orthopedic house officers and staff attendings, experience in intercollegiate field house training rooms, and the evaluation of the acutely injured athlete. Diagnostic and surgical arthroscopy of the knee and shoulder reconstructive surgery are emphasized. Prerequisite: SUR 601. FA WI SP SU [4 weeks] Bach.

SUR 651 Clinical Orthopedics. The primary emphasis is on examination, diagnosis, pathology and treatment of conditions affecting the musculoskeletal system. The student participates in clinical work in physicians' offices and hospital facilities such as the cast room and the operating room. Prerequisite: SUR 601. FA WI SP SU [4 weeks] Gitelis.

SUR 652 Orthopedic Research. Research and bioengineering as applied to the musculoskeletal system are studied with particular emphasis on the pathomechanics of human gait, mechanics of lifting, experimental use of implants in animals and their effects on biologic systems. Prerequisite: SUR 601. FA WI SP SU [8 weeks] Andriacchi.

SUR 656 Clinical Neurosurgery. This clinical clerkship expands upon and demonstrates the practical application of neurological sciences. The emphasis is on diagnosis and pathophysiological correlation of diseases of the nervous system. Practical application of neurosurgical management and diagnosis as well as the treatment of neurosurgical emergencies is studied in detail. Prerequisite: SUR 601. FA WI SP SU [4 weeks] Whisler.

SUR 657 Principles of Ophthalmic Examination. Students learn basic ophthalmic terminology, history and examination principles, attend daily rounds and other didactic sessions, and observe surgery. It is intended that students will not only learn techniques of examination which will be useful in their own medical practices, but will also understand the capabilities and limits of the ophthalmologist in order to make better use of ophthalmic consultations. Prerequisite: SUR 601. FA WI SP SU [2 weeks] T. Deutsch.

SUR 658 Research in Ophthalmology. Research projects are available in both basic or clinical sciences for students with a special interest in ophthalmology. Students will be introduced to techniques of research including problem identification, study design, research methods, data collection, statistical analysis literature review, and manuscript production. Although the elective must be taken for a minimum of eight weeks, it is not necessary for a project to be completed within the short period of the elective, nor is it guaranteed that a given research project will culminate in a publication. Prerequisites: MED 601, SUR 601. FA WI SP SU [8 weeks] T. Deutsch.

SUR 659 Otolaryngology. Clinical experience is provided in the diagnosis and management of patients with diseases of the ear, nose, throat, head, and neck. Office practice and the care of hospitalized patients

provide the basis for clinical instruction, with emphasis on case study and proper use of instruments. Departmental pathology, radiology and otology conferences and journal club are included. Prerequisite: SUR 601. FA WI SP SU [4 weeks] Caldarelli.

SUR 661 Surgical Oncology. Concentrated experience in the surgical diagnosis and management of patients with tumors is provided. Correlation of surgical problems with anatomic and pathological physiology is stressed, including examination of gross and microscopic tissue. Attendance at the tumor clinic, tumor conference, and head and neck tumor conference is required. Prerequisite: SUR 601. FA WI SP SU [6 weeks] Economou.

SUR 670 Speech and Hearing. An introduction to speech, language and hearing problems. Observation and interaction with patients demonstrating aphasia, dysarthria, stuttering, cleft palate and developmental speech abnormalities are provided. Experience in interpretation of basic hearing assessment, as well as special auditory tests to differentiate conductive and sensorineural hearing loss; cochlear and retrocochlear pathology, and nonorganic and organic hearing loss is also provided. Prerequisite: Instructor approval required. FA WI SP SU [2 to 4 weeks] Jensen.

SUR 671 Thoracic Surgery. The diagnosis, operative, and postoperative care of patients with pulmonary and esophageal disorders are studied in both hospitalized and ambulatory patients. In addition, students assist in patient care, and topics are assigned for discussion. Prerequisite: SUR 601. FA WI SP SU [4 weeks] Kittle.

SUR 680 Third World Medicine Surgery Clerkship. Students will be part of an approximately 30 member team doing cleft-lip and palate surgery on children. The varying degrees of social and medical conditions provide the third world background with an exciting opportunity for learning. The team works intensely each day and has operated on as many as 200 children in one week. Approval must be obtained from the dean's office. Offered in February only. Fourth year standing. [4 weeks] Bradley.

FACULTY

Departmental Faculty Listing 165

Alphabetical Faculty Listing 200

Faculty by Department

ANATOMY

Andriacchi, Thomas P.*
Professor

Dinsmore, Charles E. *
Assoc. Professor

Durica, Thomas E. *
Asst. Professor

Galante, Jorge O. *
Professor

Gardiner, Richard
Professor

Hughes, W Franklin *
Assoc. Professor

Jacob, Susan K. *
Asst. Professor

Kerns, James M. *
Assoc. Professor

Khodadad, Jena *
Asst. Professor

Kuszak, Jerome R. *
Assoc. Professor

Maibenco, Helen
Emeritus

Rawlins, Richard
Asst. Professor

Schmidt, Anthony *
Professor
Chair.

Seale, Raymond *
Professor

Sumner Jr., Dale R.*
Asst. Professor

Williams, James M. *
Asst. Professor

ANESTHESIOLOGY

Adkins, James M.
Assistant

Badrinath, Shyamala K.
Asst. Professor

Barkin, Robert
Assistant

Barnett, Jayson W.
Assistant

Bautista, Michael
Assistant

Besser, Timothy P.
Assistant

Bondoc, Felipe
Associate

Braverman, Berton
Asst. Professor

Buehler, Eric Andre
Assistant

Callahan, Patrick
Assistant

Carroll, Gilbert
Asst. Professor

Cocadiz, Norval
Instructor

Djordjevich, Ljubomir
Asst. Professor

Doncheff, Iwan
Asst. Professor

El Ganzouri, Abdel R.
Assoc. Professor

Elbaz, Nabil M. I.
Assoc. Professor

Fischer, Ronald
Asst. Professor

Ford, Erica W.
Asst. Professor

Greenwald, Steven
Instructor

Hahn, Robert
Visit. Asst. Professor

Heckel, V. Eileen
Emeritus

Heller, Floyd N.
Assoc. Professor

Hunter III, James A.
Assistant

Ibrahim, Tahcin
Asst. Professor

Ivankovich, Anthony
Professor
Chair.

Jaros, Joseph A
Assistant

Jones, Donald H.
Assistant

Kassa, Christine
Instructor

Keane, Donal M.
Asst. Professor

Keh-wong, Elisa S.
Asst. Professor

Kerchberger, John P.
Instructor

Kierney, Catherine M.P.
Associate

Kind, Jonathan D.
Assistant

Kloep, Michael L.
Assistant

Kogan, Avrimin
Assistant

Lai, Joseph C.
Asst. Professor

Lai, Tai Min
Instructor

Larson, John M.
Asst. Professor

Lee, Roger H.
Assistant

Lin, Yuan-Hwai
Instructor

Livshutz, Vladimir
Assistant

Logas, William George
Asst. Professor

Lubenow, Timothy R.
Instructor

Mady, Vekatgiri
Instructor

Martin, Nell F.
Assistant

Mc Carthy, Robert J.
Asst. Professor

Meister, Michael D.
Instructor

Metha, Mansukh H.
Instructor

Miller, Paul E.
Instructor

Morch, E Trier
Emeritus

Murphy, Peter
Assoc. Professor

Naylor, Barbara
Assistant

Newman, L. Michael
Asst. Professor

Parnass, Samuel M
Instructor

Patel, Rajesh V.
Assistant

Pittman, Scott K.
Associate

Prasad, Neerukonda
Instructor

Reiman, James A.
Assistant

Rose, Raymond F
Emeritus

Rothenberg, David M
Instructor

Sadove, Max S
Emeritus

Santander, Marc
Asst. Professor

Saxena, Sudershan
Asst. Professor

Schmidt, Kevin J.
Assistant

Seshadri, Kandiyyur
Instructor

Shima, Arthur T
Visit. Professor

Silins, Astrida I
Asst. Professor

Spiess, Bruce D
Asst. Professor

Stetson, John B.
Emeritus

*Indicates faculty member also has an appointment in The Graduate College.

Thomason Jr, Richard D.
Asst. Professor

Tio, Diego U.
Associate

Tsai, Houn
Instructor

Tuman, Kenneth J.
Asst. Professor

Valdivia, Juan F.
Instructor

Villafior, Edward
Assistant

Wong, Alfonso
Asst. Professor

Woronowicz, Andrew
Assistant

Wu, Dickson S.
Assistant

BIOCHEMISTRY

Anderson, Kenning M. *
Assoc. Professor

Arsenis, Charalampos
Visit. Professor

Aydelotte, Margaret *
Asst. Professor

Bagdade, John *
Asst. Professor

Bezkorovainy, Anatoly *
Professor
Assoc. Chair

Brocks, Dietrich
Visit. Asst. Professor

Campion, Giles V.
Instructor

Cohen, Maynard
Professor

Cole, Ada A.
Instructor

Cole, Edmond *
Professor

Dimuzio, Michael *
Visit. Asst. Professor

Dubin, Alvin *
Professor

Dudkiewicz, Alan B.
Assoc. Professor

Fassbender, Hans G.
Visit. Professor

Front, Phillippe
Instructor

Glant, Tibor T.
Assoc. Professor

Harrison, William H. *
Professor

Hayashi, James A. *
Professor

Homandberg, Gene
Assoc. Professor

Huff, John P.
Instructor

Iyer, Anad P.
Asst. Professor

Hoskin, Francis C. G.
Professor

Kachmar, John F.
Emeritus

Kimura, James H. *
Professor

Knudson, Cheryl *
Asst. Professor

Knudson, Warren *
Asst. Professor

Kornel, Ludwig *
Professor

Kuettner, Klaus E. *
Professor
Chair

Lange, Yvonne *
Professor

Lenz, Mary Ellen
Instructor

Lobstein, Otto E.
Assoc. Professor

Matijevitch, Branislav
Instructor

Mattenheimer, Hermann *
Professor
Assoc. Chair

Miller-Catchpole, R.
Asst. Professor

Morley, Colin *
Assoc. Professor

Rafelson Jr, Max E. *
Emeritus

Raiss, Ruth Xenia *
Visit. Assoc. Professor

Rubenstein, Marvin
Asst. Professor

Schmid, Thomas M. *
Asst. Professor

Schumacher, Barbara
Instructor

Singh, Ashok
Asst. Professor

Sky Peck, Howard H. *
Professor

Snopko, Rose Marie
Instructor

Subbaiah, Papasani V. *
Assoc. Professor

Thonar, Eugene *
Assoc. Professor

Webster, Robert A.
Asst. Professor

Whisler, Kenneth E. *
Asst. Professor

Whisler, Walter
Professor

Zaneveld, Lourens *
Professor

CARDIO- VASCULAR- THORACIC SURGERY

Andersen, James H.
Assistant

Bhutto, Zahida R.
Assistant

Dabir, Reza
Instructor

Davalle, Michael J.
Asst. Professor

Davis, Zev
Instructor

De Laria, Giacomo
Assoc. Professor

DeLeon, Serafin
Lecturer

Dye Jr, William S.
Emeritus

Faber, L. Penfield
Professor

Garibaldi, Abel
Instructor

Goldin, Marshall D.
Assoc. Professor

Guillory, Joel
Instructor

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Professor
Chair.

Dean, Robert K.
Instructor

Derman, Gordon H.
Asst. Professor

Figueroa, Alvaro
Instructor

Glick, David
Instructor

Gold, Henry O.
Emeritus

Goldflies, Myles E.
Lecturer

Kalimuthu, Ramasamy
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Kurth, Milton E.
Emeritus

Mc Nally, Randall E.
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Monroe, Clarence W.
Emeritus

Mooney, Gabriel O.
Instructor

Reisberg, David J.
Associate

Schenck, Robert R
Assoc. Professor

Seetapun, Anun
Instructor

Shah, Rajendra M.
Asst. Professor

Sperling, Richard L.
Associate

Swartz, Robert M.
Instructor

Weinrib, Harry P.
Instructor

PREVENTIVE MEDICINE

Baier, Claudia A.
Instructor

Berndtson, Keith
Asst. Professor

Betz, Eleanor
Asst. Professor

Brewer III, Robert D.
Asst. Professor

Brody, Jacob A.
Visit. Professor

Burton, Wayne N.
Asst. Professor

Davidson, Michael H.
Instructor

Davis, Andrew M.
Asst. Professor

Dillon, Charles D.
Asst. Professor

Dwarakanathan, Arcot A.
Asst. Professor

Eckenfels, Edward J.
Assoc. Professor

Elam, Harry P.
Assoc. Professor

Engelberg, Alan L.
Asst. Professor

Glandon, Gerald L.
Asst. Professor

Grouse, Lawrence D.
Associate

Hahn, Jerome J.
Assoc. Professor

Hall, Yolanda F.
Asst. Professor

Harris, Alan A.
Assoc. Professor

Hawes, Jane P.
Instructor

Hudson, Edsel K.
Assoc. Professor

Johnston, Louis C.
Assoc. Professor

Jones Jr., Clay H.
Assoc. Professor

Kallick, Charles
Assoc. Professor

Kalousdian, Sona
Asst. Professor

Kassriel, Robert S.
Asst. Professor

Klinger, Alfred D.
Associate

Knight, Susan
Instructor

Lepper, Mark H.
Professor

Levin, Stuart
Assoc. Professor

Levine, Charlotte C.
Emeritus

Levine, Milton D.
Emeritus

Liebson, Philip R.
Professor

Llewellyn, John W.
Asst. Professor

Madden, Thomas
Assoc. Professor

Mc Creary, Patricia A.
Assoc. Professor

Meyer, John H.
Associate

Mindlin, Rowland L.
Visit. Professor

Nelson, Karen B.
Asst. Professor

Neri Jr., Gilberto S.
Asst. Professor

Norusis, Marija
Assoc. Professor

Oleske, Denise M.

Asst. Professor

Payne, Joseph

Asst. Professor

Pomerantz, Rhoda S.

Asst. Professor

Post, John

Emeritus

Proteau, Roseanne V.

Asst. Professor

Remijas, Tracy L.

Instructor

Schoenberger, James A.

Professor

Chair

Schoenenberger, Joseph

Asst. Professor

Sheldon, Stephen H.

Visit. Asst. Professor

Shott, Susan

Asst. Professor

Spies, Harold W.

Associate

Storlie, Jean

Instructor

Taylor, Prentiss

Asst. Professor

Turner, Irene R.

Asst. Professor

Van Peenen, Peter F.

Professor

Williams, E. Jane

Asst. Professor

PSYCHIATRIC NURSING

Anderson, Susan

Instructor

Carlson-Sabelli, L.

Asst. Professor

Casey, M. Ginny

Instructor

Christman, Luther

Professor

Correa, Mary E.

Asst. Professor

Farran, Carol J.

Asst. Professor

Fiske, Marian

Asst. Professor

Fogg, Louis F.

Associate

Geis, Alice

Instructor

Giovacchini, Virginia

Instructor

Gross, Deborah

Assoc. Professor

Heideman, Jean

Instructor

Hough, Edythe E.

Assoc. Professor

Ipema, Donna K.

Assoc. Professor

Johnson, Mary E.

Instructor

Kapoor, Febl

Associate

Kennedy, Fortunata

Associate

Kopytko, Edwin E.

Instructor

Koranda, Ann

Assistant

Kupterer, Sylvia

Instructor

Lettieri-Marks, Donna

Instructor

Lusk, Peggy

Asst. Professor

Lynch, Priscilla

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Maxson, Ellen L.

Instructor

Newman, Ann

Associate

Nighorn, Sharon

Instructor

Patrick, Dianne

Instructor

Pitula, Carol

Instructor

Perraud, Suzanne

Instructor

Rowe, John

Instructor

Scorza, Elaine

Associate

Snyder, Marsha

Asst. Professor

Sundberg, May

Instructor

Szczesny, Susan

Asst. Professor

Acting Assoc. Chair

Ulsafer-Van Lanen, Jane

Asst. Professor

Acting Chair

Wideman-Levin, Marilyn

Instructor

PSYCHIATRY

Aagesen, Carl

Asst. Professor

Ahluwalia, Y. Kumar

Asst. Professor

Amdur, Mark

Asst. Professor

Anderson, David R.

Asst. Professor

Armstrong, Claressa

Asst. Professor

Arons, Martin

Asst. Professor

Baer, Richard K.

Instructor

Bagri, Sushil

Asst. Professor

Banegas, Marta E.

Asst. Professor

Basch, Gail M.

Assistant

Basch, Michael

Professor

Belizario, Evangelina

Instructor

Benson, David

Asst. Professor

Berendi, S. Alexander

Asst. Professor

Berger, Jack C.

Asst. Professor

Blake, Lesley Margaret

Asst. Professor

Bloom, Robert W.

Instructor

Braun, Bennett G.

Instructor

Brennan, Terry E.

Asst. Professor

Buch, Piyush C.

Instructor

Buck, David W.

Asst. Professor

Busch, Katie

Asst. Professor

Camp, Toni Jean

Assistant

Cann, Stephen R.

Instructor

Carlock, William D.

Instructor

Cavanaugh Jr., James L.

Professor

Cavanaugh, Stephanie

Assoc. Professor

Chor, Philip N.

Asst. Professor

Christopoulos, Angelos

Asst. Professor

Chuy, Ismael Lee

Assistant

Clark, David C.

Assoc. Professor

Clark, Susan H.

Instructor

Combs, Gene N.

Asst. Professor

Cooperman, Suzanne K.

Asst. Professor

Corbett, Lionel

Asst. Professor

Crawford, James W.

Assoc. Professor

Dampitz, Robert E.

Asst. Professor

Daugherty, Milton H.

Instructor

David, Paul P.

Asst. Professor

Davis-Maxam, Glynda

Assistant

De Sa Pereira, E.

Asst. Professor

Dederick, Margarida M.

Asst. Professor

Del Campo, Jose A.

Asst. Professor

Drucker, Debra M.

Assistant

Ebenhoeh, Patrick E. Asst. Professor	Hammon, Ann-Lucinda Assistant	Kravitz, Howard Asst. Professor	Ostrov, Eric Asst. Professor
Edwards, John H. Visit. Asst. Professor	Hanni, John W. Professor	Lane, Harold J. Instructor	Patel, Minaldevi Asst. Professor
Epstein, Phillip S. Asst. Professor	Harris, Charles R. Instructor	Langsley, Pauline R. Assistant	Patterson, Joan E. Asst. Professor
Ericksen, Stephen E. Asst. Professor	Hartman, Edith Instructor	Lazarus, Lawrence W. Asst. Professor	Pecen, Nancy E. Instructor
Fanelli, Joseph G. Assistant	Haynes, Joan Instructor	Leff, Joel R. Instructor	Perkins, George L. Emeritus
Fawcett, Jan A. Professor	Hendler, Samuel Asst. Professor	Levin, Daniel Eric Assistant	Pieper, William J. Asst. Professor
Chair.	Herrmann, Kerilynn Assistant	Levitt, Leroy Professor	Pisani, Vincent D. Asst. Professor
Feldmann, Theodore B. Instructor	Hirsch, Alan R. Instructor	Libert, Samuel A. Associate	Pollock, George H. Lecturer
Fink, Peter Asst. Professor	Holemon, Lance D. Assistant	Loftgren, Katharine A. Asst. Professor	Putnam, Frank W. Visit. Assoc. Professor
Finkelstein, Adrian Asst. Professor	Holinger, Paul C. Assoc. Professor	Mangoubi, Elie Instructor	Rattan, Pradeep Instructor
Freeman, Anne Assistant	Hovde, Christian A. Asst. Professor	Martinazzo-Dunn, Anna Instructor	Rebeck, Barry M. Instructor
Garvin, John S. Professor	Hulcher, Julia H. Instructor	Maxwell, Sarz Assistant	Reifman, Robert A. Asst. Professor
Gerty, Francis J. Emeritus	Ivanoff, Jeffrey A. Asst. Professor	Mc Neil, David L. Assistant	Reinstein, Michael J. Asst. Professor
Gierl, Benedict L. Asst. Professor	Jaffe, Charles M. Asst. Professor	Mehlinger-Mitchell, R. Asst. Professor	Ripecky, Andrew Asst. Professor
Gilmer, William S. Assistant	Jiron, Arnoldo J. Asst. Professor	Meehan, Marjorie C. Emeritus	Rives, Cathy M. Assistant
Gokhale, Sudhir M. Instructor	Johnson, Bruce C. Instructor	Meisner, John W. Instructor	Rosenthal, Maurice J. Asst. Professor
Golchini Shafa, Mehdi Associate	Johnson, Kathleen H. Assistant	Mershon, Steven Asst. Professor	Rosenthal, Ruth Beth Instructor
Goldberg, Arnold I. Professor	Jones, Frank A. D. Asst. Professor	Miller, Raymond N. Associate	Sabelli, Hector C. Assoc. Professor
Goodfriend, Marlene S. Asst. Professor	Joseph, David A. Instructor	Misch, Donald Instructor	Sachs, Roberta Asst. Professor
Grossman, Linda S. Asst. Professor	Kaegi, Charles E. Instructor	Moolayil, Kumar D. Instructor	Samelson, Charles F. Asst. Professor
Guise, Gracia Asst. Professor	Katz, Jerome I. Asst. Professor	Morrison, David Asst. Professor	Sanchez, Jose Ramon Asst. Professor
Gutmann, Cheryl M. Asst. Professor	Kelly, Jonathan Asst. Professor	Nageotte, Catherine Assistant	Sanders, Roxane Y. Assistant
Gwyer, Fred V. Asst. Professor	Kluft, Richard P. Visit. Assoc. Professor	Nuzzarello, Angela Assistant	Schaff, Mary Ruth Asst. Professor
Ha, Yong Soo Instructor	Kniffin, Judith E. Assistant	Olsen, Joann Marie Assistant	Scheftner, William A. Asst. Professor
Halper, Ira S. Asst. Professor	Kraines, Samuel H. Emeritus	Orloff, Mollie Emeritus	Schmitz, John M. Assistant

Faculty by Department

Schroeder, Steven M.

Instructor

Schwarz, Marvin

Asst. Professor

Shulman, Robert B.

Assistant

Shvartsman, Leonid

Instructor

Sivan, Abigail

Asst. Professor

Smith, Garth D.

Asst. Professor

Sokhey, B. J.

Associate

Sommerfeldt, Lorraine

Instructor

Spigelman, Lilian

Asst. Professor

St. Clair, Doris E.

Asst. Professor

St. Pierre, Aimee C.

Asst. Professor

Stampley, Jan O.

Instructor

Steed, W. David

Assoc. Professor

Strozier, Charles P.

Visit Asst. Professor

Strumpf, Andrea J.

Associate

Thampy, Kishore J.

Asst. Professor

Thompson, Dennis S.

Instructor

Tilkin, Jeffrey M.

Asst. Professor

Trager, Eugene P.

Asst. Professor

Trakas, Demetrius A.

Asst. Professor

Vazquez, Juan J.

Asst. Professor

Vivar, Zenaida

Instructor

Voltolina, Eugene J.

Instructor

Wahistrom Jr., Carl M.

Assistant

Wasyliw, Orest

Asst. Professor

West, James Ward

Asst. Professor

Westheimer, Ruth

Asst. Professor

Wolfe, John R.

Emeritus

Wright, Donovan G.

Emeritus

Yballe, Sonia B.

Asst. Professor

Young, Michael

Asst. Professor

Zadylak, Robert G.

Asst. Professor

Zajacka, John M.

Instructor

Zakko, Hazim Y

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PSYCHOLOGY & SOCIAL SCI

Amstutz, Diane

Asst. Professor

Anderson, David R. *

Asst. Professor

Andrews, Susan B.

Asst. Professor

Aschkenasy, Jean R.

Asst. Professor

Banks, Geraldine B.

Assistant

Bernard, Bryan A.

Asst. Professor

Berry, Robert A.

Instructor

Bieliauskas, Linas *

Assoc. Professor

Biscardi, David

Asst. Professor

Brocken, Cecilia *

Assoc. Professor

Brown, Roger

Asst. Professor

Burton, Stephen A.

Asst. Professor

Cartwright, Rosalind D. *

Professor

Chair

Cella, David F.

Asst. Professor

Cheifetz, David I. *

Professor

Christman, Luther

Professor

Clark, David C.

Assoc. Professor

Collins, Frank L., Jr. *

Assoc. Professor

Counte, Michael

Assoc. Professor

Crawford, James W.

Assoc. Professor

Daugherty, Steven R.

Instructor

De Toledo-Morrell, L. *

Assoc. Professor

Eastman, Charmane *

Assoc. Professor

Etscheidt, Mark A.

Asst. Professor

Farrell, Patricia

Asst. Professor

Fiducia, Denise

Asst. Professor

Forrest, Nancy

Assistant

Garron, David C. *

Professor

Glandon, Gerald L.

Asst. Professor

Grosse, Debra A.

Assistant

Grossman, Linda S.

Asst. Professor

Grote, Christopher L.

Asst. Professor

Guise, Gracia *

Asst. Professor

Haut, Allyson E.

Instructor

Hron-Stewart, Kim M.

Assistant

Johnson, Marilyn A. *

Asst. Professor

Johnson, Nathan S.

Assistant

Johnson, Paul

Asst. Professor

Kravitz, Howard *

Asst. Professor

Langgut, Mark B.

Asst. Professor

Leavitt, Frank *

Assoc. Professor

Linsky, Miles A.

Asst. Professor

Lloyd, Stephen R.

Instructor

Lofgren, Katharine A.

Asst. Professor

Lopez, Martita *

Asst. Professor

Martzke, Jeffrey Scott

Assistant

Mason, Cathleen M.

Assistant

Mc Namara, Barry T.

Asst. Professor

Mead, John D. *

Asst. Professor

Moncrieff, Ellsworth H.

Associate

Nelson, Michael N. *

Asst. Professor

Nyenuis, David L.

Asst. Professor

Ostrov, Eric

Asst. Professor

Pisani, Vincent D.

Asst. Professor

Ristanovic, Ruzica

Asst. Professor

Rosenthal, Mitchell

Assoc. Professor

Rybarczyk, Bruce D.

Asst. Professor

Sachs, Roberta

Asst. Professor

Schoenenberger, Joseph

Asst. Professor

Sher, Tamara G.

Asst. Professor

Siegel, Sandra C.

Instructor

Sivan, Abigail B.

Asst. Professor

Snyder, Darrell

Asst. Professor

Stebbins III, Glenn

Assistant

Stewart, James D.
Asst. Professor

Tulsky, David S.
Instructor

Wasyliw, Orest
Asst. Professor

Wetzel, Allan B.
Asst. Professor

Wiener, Alane L.
Assistant

Wilson, Robert S. *
Assoc. Professor

Young, Michael
Asst. Professor

Zitter, Robert E.
Asst. Professor

RELIGION & HEALTH

Burbank, Barbara Beth
Asst. Professor

Burck, Russell
Assoc. Professor

Corrigan, James V.
Assoc. Professor

Fitchett, George
Assoc. Professor

Hovde, Christian A.
Emeritus

O'Reilly, Jo Ann
Asst. Professor

Temming, M. Carole
Asst. Professor

Wagner, William A.
Asst. Professor

THERAPEUTIC RADIOLOGY

Coleman, Fay K.
Assistant

Conterato, Dean
Assistant

Gagnon, James D.
Asst. Professor

Galinsky, Dennis L.
Asst. Professor

Griem, Katherine L.
Asst. Professor

Groch, Mark W.
Assoc. Professor

Hartsell, William
Asst. Professor

Heaton, Diane M.
Assistant

Hendrickson, Frank R.
Professor
Chair

Huang, Jeng-shyuaan
Instructor

Jette, David
Asst. Professor

Kang, Shaw-dyi
Instructor

Kao, Mark
Asst. Professor

Kartha, Ponnunni K. I.
Assoc. Professor

Kazlauskas, Linas John
Assistant

Kim, Youngnan S.
Assistant

Kramer, Toby
Asst. Professor

Lanzi, Lawrence H.
Professor

Lee, Myung-sook
Assoc. Professor

Marshall, Ingrid
Asst. Professor

Murthy, Anantha K.
Assoc. Professor

Phillips, Alexander K.
Asst. Professor

Phillips, Richard L.
Visit. Assoc. Professor

Recine, Diane C.
Assistant

Reddy, Salitha
Assoc. Professor

Rozenfeld, Martin
Professor

Rubin, David B.
Asst. Professor

Sarin, Pramilla
Asst. Professor

Saroja, Kurubarahalli
Professor

Saxena, Virenda S.
Professor

Share, Robert
Assistant

Sharma, Madhu M.
Assistant

Starr, Stuart J.
Asst. Professor

Urbon, John
Asst. Professor

UROLOGY

Baumgartner, George C.
Asst. Professor

Bormes, Thomas P.
Assistant

Callahan, Daniel H.
Assoc. Professor

Cinel, Scott J.
Assistant

Ekbal, Shahid S.
Asst. Professor

Flanagan, Malachi J.
Professor

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Emeritus

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Hoyme, Kermit
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Mc Kiel Jr., Charles
Professor
Chair

Merricks, James W.
Emeritus

Nold, Stephen
Instructor

Papierniak, Frank B.
Emeritus

Pessis, Dennis A.
Asst. Professor

Rooney, Peter
Instructor

Sadoughi, Nader
Assoc. Professor

Sokovich, Ronald
Assistant

Slutsky, Joel N.
Instructor

Sosenko, George R.
Instructor

Spellberg, David Mark
Assistant

Alphabetical List

The following list include self-reported data on the highest degree, and university conferring that degree, plus the department(s) in which the faculty member has an appointment and, if applicable, network hospital affiliation.

Abbreviations for Network Hospital Affiliation

(no abbreviation indicates Rush-Presbyterian-St. Luke's Medical Center)

BETH	Bethany Hospital	MJ	Marionjoy Rehabilitation Center
CDH	Central DuPage Hospital	MLSQ	Mile Square Health Center, Inc.
CH	Christ Hospital	MTSN	Mt. Sinai Hospital Medical Center
COPL	Copley Memorial Hospital	RNS	Rush North Shore Medical Center
GBUR	Galesburg Cottage Hospital	SMAR	St. Mary's Hospital
GRNT	Grant Hospital of Chicago	SWED	Swedish Covenant Hospital
LMCH	LaGrange Memorial General Hospital	WSUB	West Suburban Hospital Medical Center
MAC	Mac Neal Memorial Hospital		

Abbreviations used for Academic Degrees

A.B.; B.A.	Bachelor of Arts
B.D.	Bachelor of Divinity
B.S.	Bachelor of Science
D.A.	Doctor of Arts
D.D.	Doctor of Divinity
D. Min.	Doctor of Ministry
D.D.S.	Doctor of Dental Surgery
D.N.S.	Doctor of Nursing Science
D.O.	Doctor of Osteopathy
Dr. P.H.	Doctor of Public Health
D.S.N.	Doctor of Science in Nursing
D.V.M.	Doctor of Veterinary Medicine
Ed.D.	Doctor of Education
J.D.; L.L.B.	Doctor of Laws
M.A.	Master of Arts
M.B.A.	Master of Business Administration
M.B., Ch.	Bachelor of Medicine/Bachelor of Chirurgy
M.B.B.S.	Bachelor of Medicine/Bachelor of Surgery
M.C.D.	Master of Communicative Disorders
M.D.	Doctor of Medicine
M.H.A.; M.H.S.A.	Master of Hospital Administration
M.M.	Master of Management
M.N.	Master of Nursing
M.O.T.	Master of Occupational Therapy
M.P.H.E.	Master of Public Health Education
M.S.	Master of Science
M.S.Ed.	Master of Science in Education
M.S.I.E.	Master of Science in Industrial Engineering
M.S.N.	Master of Science in Nursing
M.S.W.	Master of Science in Social Work
Pharm. D.	Doctor of Pharmacy
Ph.D.	Doctor of Philosophy
Psy.D.	Doctor of Psychology
Th.M.	Master of Theology

Note.

- Lowell Technological Inst. is now the U. of Lowell
- Chicago-Kent College of Law Merged with I.I.T. in 1969
- Chicago Med. Sch. is now the U. of H S./Chicago Med. School
- Rush Med. Col. degrees were conferred by The U. of Chicago through 1942
- Sch. of Med. of Marquette U. is now Med. Col. of Wisc
- M.D. degrees conferred by the U. of I. were conferred by the U. of I. at Urbana until 1973; by the U. of I. at the Med. Ctr. until September 1982; by the U. of I. Chicago thereafter
- Jefferson Med. Col. of Phila. is now part of Thomas Jefferson U.

Alphabetical Faculty Listing

A

Aagesen, Carl

D.O. U. of Iowa
Psychiatry

Abbasi, Ismail M

Pediatrics (CH)

Abcarian, Herand

M.D. Iran
Gen. Surg.

Abella, Dennis C

D.O. Chgo Col. Osteo Med.
Int. Med.

Abensohn, Meryl K.

M.D. Washington U
Dermatology

Abrahamian, Frida

M.D. Ohio State U
Int. Med.

Abramowitz, Bruce

M.D. SUNY at Buffalo
Int. Med. (CH)

Abrams, Lisa I.

M.D. Loyola U. of Chicago
Int. Med.

Abrams, Richard I

M.D. U. of Illinois
Int. Med.

Abusharif, Hamdala H.

M.D.
Pediatrics

Accord, Lea G

Pediatrics

Acharya, Vasant

M.B.B.S. India
Ob. & Gyne.

Ackerman, Laurens V.

M.D. U. of Illinois
Ph.D. U. of Illinois
Di. Rad. & Nuc. Med.

Ackley, William O

M.D. Chicago Medical Sch.
Gen. Surg. (SWED)

Adame, Homero

M.D. Mexico
Fam. Prac. (CH)

Adams, Verdine

D.P.M. Northwestern U
Ortho. Surg.

Adapathya, Shankamara

Ob. & Gyne.

Adelman, Scott H

M.D. Michigan State U.
Int. Med.

Adkins, Geoffrey

M.D. U. of Chicago
Ob. & Gyne.

Adkins, James M.

M.D. U of Illinois
Anesthes.

Adler, Solomon

M.D. Einstein Col. of Med.
Int. Med.

Adler, Yolanda T

M.D. Argentina
Di. Rad. & Nuc. Med., Int. Med.

Aduss, Howard

D.D.S. Northwestern U.
Pls. & Rec. Surg., Gen. Surg.

Agahigian, David D.

M.D.
Ophthalmology

Agarwal, Gyan C.

Ph.D. Purdue U.
Physiology

Agarwala, Brojendra N.

M.B.B.S. India
Pediatrics (MTSN)

Aggarwal, Keshav

M.D. India
Int. Med.

Agruss, Neil

M.D. U. of Illinois
Int. Med.

Ahart, Sharon L.

M.D. Mexico
Pediatrics (MTSN)

Ahluwalia, Y. Kumar

M.B.B.S. India
Psychiatry (MTSN)

Ahmad, Magdy

M.B.Ch. India
Pediatrics

Ahmad, Tanveer

Ph.D. Rush U.
Pharmacology

Ahmadian, Yahya S.

M.D. Iran
Pediatrics (CH)

Ahmed, Khalid F.

M.B.B.S. Pakistan
Fam. Prac. (CH)

Ahmed, Mohammad

M.B.B.S. India
Int. Med. (MTSN)

Ahmed, Vasia A.

M.B.B.S. Pakistan
Int. Med.

Ahmed, Ziauddin

M.B.B.S. India
Int. Med.

Ahstrom Jr., James P.

M.D. Northwestern U.
Ortho. Surg. (WSUB)

Ajayi, Oluade A.

M.B.B.S. India
Pediatrics

Aimi, Kenji

M.D. Japan
Oto. & Bronc.

Akers, Paul T.

D.D.S. Loyola U. of Chicago
Gen. Surg.

Akhtar, Moyeed

M.B.B.S. India
Pediatrics

Aki, Robert H.

M.D. U. of Illinois
Gen. Surg. (CH)

Akrami, Cyrus

M.D. Iran
Pediatrics (CH)

Akre, Osmund H.

M.D. Rush U.
Int. Med.

Al Aswad, Basel

M.D. Iraq
Ortho. Surg. (CH)

Al-jabi, Ayman

M.P.H. U. of Illinois
Pediatrics

Alavi, Iltifat A

M.B.B.S. Pakistan
Int. Med. (COMM)

Alavi, Nahid

M.D. Iran
Int. Med.

Albert, Brian

M.D. U. of Illinois
Int. Med.

Albertson, Barbara J.

M.D. U. of Illinois
Pediatrics

- Albovias, Susan P.**
M.D. Philippine Is.
Fam. Prac. (CH)
- Albrecht, Leslie J.**
M.D. Rush U.
Med. Nsg
- Alcorn, Franklin**
M.D. New York U.
Di. Rad. & Nuc. Med
- Alder, Gary F.**
D.D.S. Northwestern U.
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- Aleman, Marco A.**
M.D. U. of Illinois
Int. Med.
- Alejano, Eugenio V.**
M.D. Philippines
Phys. Med & Rhb.
- Alexander, Anita**
M.S. Rush U.
Mat. Child Nsg.
- Alexander, Maryann**
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- Ali, Amjad**
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- Aliaga, Jorge**
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- Allen, Richard M.**
M.D. U. of Illinois
Ob. & Gyne
- Allen, Richard R.**
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Pediatrics (LMGH)
- Amabile, Phyllis E.**
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Psychiatry
- Ambrose, Laureen**
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- Ambutas, Shirley**
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- Amdur, Mark**
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- Amine, Abdul R. C.**
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M.D. Greece
Int. Med. (CH)
- Anath, Sheela**
Pediatrics
- Andejski, Jean M.**
M.S. Rush U.
Med. Nsg.
- Andersen, James H.**
M.D. U. of Illinois
Cv.T. Surg. (WSUB)
- Anderson, Chistine L.**
M.D. Loyola U. of Chicago
Ob. & Gyne.
- Anderson, David R.**
Ph.D. U. of North Dakota
Psy./Soc. Sc., Psychiatry
- Anderson, Donald**
M.D. Case Western Reserve
Fam. Prac.
- Anderson, Jeffrey E.**
M.D. Rush U.
Gen. Surg.
- Anderson, Keith C.**
B.S. U. of Colorado
Phys. Med. & Rhb.
- Anderson, Kenning M.**
M.D. Northwestern U.
Ph.D. U. of Chicago
Biochemistry, Int. Med.
- Anderson, Philip**
M.D. U. of Nebraska
Ph.D. U. of Nebraska
Fam. Prac. (SWED)
- Anderson, Richard W.**
M.D. U. OF Illinois
Ob. & Gyne. (COMM)
- Anderson, Robert A.**
Ph.D. U. of Illinois
Ob. & Gyne.
- Anderson Jr, Robert A.**
Ph.D. Chicago Medical Sch.
Ob. & Gyne. Physiology
- Anderson, Susan**
M.S.N. Wayne State U.
Psychi. Nsg.
- Andersson, Gunnar**
M.D. Sweden
Ph.D. Sweden
Ortho. Surg.
- Andina, Robert J.**
Ph.D. U. of Washington
M.D. U. of Washington
Int. Med. (CH)
- Andrews, Susan B.**
Ph.D. U. of Illinois
Psy./Soc. Sc.
- Andriacchi, Julia H.**
M.D. Northwestern U.
Psychiatry
- Andriacchi, Thomas P.**
Ph.D. U. of Illinois
Ortho. Surg.
- Andricacou, Calliope**
M.D. Greece
- Andreoli, Kathleen G.**
D.S.N. U. of Alabama-Bghm
Geront. Nsg.
- Angarita, Luis**
M.D. Spain
Int. Med. (MTSN)
- Angspatt, Sompongse**
M.D. Thailand
Pediatrics (CH)
- Anjaria, Barbara**
M.S.N. Wayne State U.
Comm. Hlth. Nsg.
- Anneken, Steven M.**
M.D. U. of Chicago
Fam. Prac.
- Anthony, Paul K.**
M.D. Loyola U. of Chicago
Pediatrics (CH)
- Antony, Alphonsa C.**
M.B.B.S. India
Fam. Prac. (CH)
- Aparicio, Luis F.**
M.D. Peru
Pediatrics
- Appleyard, Joann**
M.S.N. Loyola U. of Chicago
M.P.H. U. of Illinois
Comm. Hlth. Nsg.
- Araia, Mohammed**
M.B.B.S. Pakistan
Gen. Surg. (COMM)
- Archie, Julian T.**
M.D. New York U.
Ob. & Gyne.
- Arcilla, Rene A.**
M.D. Philippines
Pediatrics
- Armbruster, Kent**
M.D. U. of Illinois
Int. Med. (CH)
- Armstrong, Claesa**
M.D. Med. Col. of Pa.
Psychiatry
- Armstrong, Robert**
D.D.S. Northwestern U.
Gen. Surg.
- Arndt, Thomas R.**
M.D. Loyola U. of Chicago
Int. Med.
- Amecilla, Pablo B.**
M.D. Philippine Is.
Pediatrics (MTSN)
- Arnold, Carolyn**
M.S. Rush U.
Mat. Child Nsg.

B

Arons, Martin

M.D. Germany
Psychiatry (MTSN)

Arora, Vipal K.

M.B.B.S. India
Ob. & Gyne. (MTSN)

Arsenis, Charalampos

Ph.D. Cornell U. Med. Ctr.
Biochemistry

Aruguete, Christine M.

M.D. U. of Illinois
Int. Med. (CH)

Aruguete, Jose

M.D. U. of Illinois
Int. Med. (CH)

Arumugam, Thangamuthu

M.B.B.S. India
Pediatrics

Asbury, Jeffrey Blake

M.D. Rush U.
Gen. Surg.

Aschkenasy, Jean R.

Ph.D. Vanderbilt U.
Psy./Soc. Sc., Pediatrics

Ashbach, David L.

M.D. Case Western Reserve U.
Int. Med.

Ashenhurst, Julia B.

M.D. U. of Illinois
Int. Med.

Ashmann, Marilyn

M.S.N. Yale U.
O.R. & Surg. Nsg.

Atkins, Martha F.

M.S. Iowa State U.
Clinical Nutrition

Atlas, Gerald D.

M.D. U. of Illinois
Fam. Prac. (SWED)

Attar, Bashar

M.D. Syria
Int. Med.

Austin, David F.

M.D. Northwestern U.
Oto. & Bronc. (GRNT)

Austin, James H.

B.A. Yale U.
Hlth. Syst. Mgt

Avinashi, Aalok

M.B.B.S. India
Pediatrics

Axelrod, Edward H.

M.D. U. of Illinois
Ob. & Gyne. (CH)

Aydelotte, Margaret

Ph.D. United Kingdom
Biochemistry

Azeem, Asif

M.B.B.S. Pakistan

Int. Med.

Baba, Walten A.

Ph.D. United Kingdom
M.D. Iraq
Fam. Prac. (SWED)

Babakitis, Mary R.

M.D. Greece
Pediatrics (CH)

Bach Jr., Bernard R.

M.D. U. of Cincinnati
Ortho. Surg.

Backer, Barbara

M.D. Indiana State U.
Int. Med.

Bacon, Mary

M.A. Northern Illinois U.
Oto. & Bronc., Commun. Dis

Bacus, James

Ph.D. U. of Illinois
Int. Med.

Bading, Eva

M.D. Germany
Ph.D. Germany
Fam. Prac

Badrinath, Shyamala K.

M.B.B.S. India
Anesthes.

Baer, Richard K.

M.D. U. of Illinois
Psychiatry

Bagge, Marcia Jean

Mat. Child Nsg.

Bagri, Sushil

M.B.B.S. India
Psychiatry

Baier, Claudia A.

M.P.H. U. of Minn.-Morris
Prev. Med.

Bailey, Larry L.

M.D. U. of Kansas
Oto. & Bronc.

Bailey, Orville T.

M.D. Albany Med. Col.
Neuro. Sci.

Bajaj, Vijay

M.B.B.S. India
Int. Med.

Baker, Elizabeth

M.D. Loyola U. of Chicago
Int. Med.

Balagtas, Rolando C.

M.D. Philippine Is.
Pediatrics

Balakrishna, Rao P.

New York U.
Phys. Med. & Rhb.

Balandrin, Jorge E.

M.D. Mexico
Int. Med.

Baldinger, Michael

M.D. Mt. Sinai Sch. Med. of CUNY
Int. Med. (GRNT)

Baldwin Jr., David

M.D. Rush U.
Int. Med.

Balk, Robert A.

M.D. U. of Missouri
Int. Med.

Balkoura, Maria H.

M.D. Greece
Int. Med. (MTSN)

Banegas, Marta E.

M.D. Honduras
Psychiatry

Banks, Geraldine B.

Ph.D. U. of Wisconsin-Milw.
Psy./Soc. Sc.

Baraglia, James P.

M.D. Chicago Medical Sch.
Fam. Prac. (WSUB)

Barber, Frederick A.

M.D. U. of Illinois
Fam. Prac. (WSUB)

Barcilon, Victor

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Physiology

Barhyte, Diana Young

Ph.D. Cornell U. Med. Ctr.
Hlth. Syst. Mgt.

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Pharmacology, Anesthes.
Fam. Prac

Barkoviak, Michael J.

M.D. Rush U.
Int. Med.

Barnes, Denise M.

M.S. Rush U.
Mat. Child Nsg.

Barnes, Louis J.

M.D. U. of Illinois
Int. Med.

Barnett, Jayson W.

M.D.
Anesthes.

Baron, John W.

M.D. Loyola U. of Chicago
Int. Med. (CH)

Barr, Michael S.

M.D. New York Med. Col.
Int. Med.

Barr, Sanford L.

D.D.S. Northwestern U.
Oto. & Bronc.

Barrett-Schultz, Sue

M.S. Rush U.
Mat. Child Nsg.

- Barrett, David**
M.D. Marquette Sch. of Med
Pathology (CDH)
- Barrett, Jean Ellen**
M.S. I.I.T.
Medical Technology
- Barron, John T.**
M.D. Rush Medical Col
Int. Med.
- Barroso, Eduardo G.**
M.D. U. of Miami
Gen. Surg.
- Barry, Diana**
M.B.A. Rosary Col
Clinical Nutrition
- Bartels, Stephanie A.**
M.D. U. of Illinois
Int. Med.
- Bartlett, Robert**
Ph.D. Germany
Int. Med.
- Bartolotta, Ann**
M.S. Indiana U.
Hlth. Sys. Mgt.
- Barton, Evan M**
M.D. Johns Hopkins U
Int. Med.
- Basch, Gail M.**
M.D. Chicago Medical Sch.
Psychiatry
- Basch, Michael**
M.D. Loyola U. of Chicago
Psychiatry
- Basile, Deborah A.**
M.D. Rush U
Int. Med. (CH)
- Bass, Gordon**
M.M. Northwestern U
Hlth. Syst. Mgt.
- Bassuk, Angel B.**
M.D. Argentina
Gen. Surg. Pediatrics
- Batchu, Koteswara R.**
M.B.B.S. India
Pediatrics
- Batty, Karen N.**
M.S. Northern Illinois U.
Med. Nsg.
- Bauer, Michael R.**
M.D. U. of Illinois
Int. Med.
- Baum, Hugo C.**
M.D. Rush U.
Ob. & Gyne.
- Baumann, Lynn Ann**
M.M. Washington State U
O.R. & Surg. Nsg
- Baumgartner, George C.**
M.D. U. of Illinois
Urology
- Baumgartner, John M.**
Ph.D. Southern Illinois U.
Oto. & Bronc., Commun. Dis.
- Bautista, Michael**
M.D. U. of Michigan
Anesthes.
- Bayba, Jonathan L.**
M.D. U. of Arizona
Anesthes.
- Baydoun, Adnan B.**
M.D. Albany Med. Col.
Ob. & Gyne. (CH)
- Beacher, Jon Robert**
M.D. U. of Chicago
Int. Med.
- Beard, Melodie**
B.S. Indiana State U.
Medical Technology
- Becker, Frank O.**
M.D. U. of Illinois
Int. Med. (CH)
- Beckerman, John H**
M.D. U. of Chicago
Pediatrics
- Beebe, Robert A.**
M.D. U. of Illinois
Ob. & Gyne.
- Behrend, Frank L.**
M.D. U. of Illinois
Ob. & Gyne.
- Belanger, Michael G.**
Ph.D. U. of Illinois
Int. Med.
- Belizario, Evangelina**
M.D. Philippine Is.
Psychiatry
- Belkengren, Richard**
M.D. Loyola U. of Chicago
Pediatrics
- Bell, Dora Dixie**
M.D. U. of Illinois
Fam. Prac.
- Bell, Michael M.**
D.O. Chgo Col. Osteo. Med.
Fam. Prac.
- Bell, Peter**
M.D. Greece
Int. Med.
- Bell, Virginia**
B.S. U. of Kansas
Occup. Therapy
- Bellamy, April**
M.D. Howard U.
Fam. Prac.
- Bellosa, Nora T.**
M.D. Philippine Is.
Pediatrics (CH)
- Bender, Harry Z.**
M.D. Germany
Fam. Prac. (CH)
- Bennett, David**
M.D. Rush Medical Col.
Neuro. Sci.
- Bennett, Donald R.**
M.D. U. of Michigan
Ph.D. U. of Michigan
Fam. Prac., Pharmacology
- Bennett, Thomas O.**
M.D. U. of Illinois
Ophthalmology (CH)
- Benson, Constance**
M.D. Ohio State U.
Int. Med.
- Benson, David**
M.D. U. of Illinois
Psychiatry (MLSQ)
- Berchuck, Matthew**
M.D. Case Western Reserve U.
Ortho. Surg.
- Berendi, S.Alexander**
M.D. Hungary
Psychiatry
- Bereza, Deanne**
M.S. U. of Illinois
Mat. Child Nsg.
- Bergen, Donna**
M.D. U. of Illinois
Neuro. Sci.
- Bergen, Suzanne**
M.D. U. of Missouri-Kansas City
Ob. & Gyne.
- Berger, Barry W.**
D.O. U. of Chicago
Int. Med.
- Berger, Jack C.**
M.D. U. of Chicago
Psychiatry
- Berger, Jan**
M.D. Loyola U. of Chicago
Pediatrics
- Berger, Victor P.**
M.D. Chicago Medical Sch.
Neuro. Sci.
- Berkelhammer, Charles**
M.D. Canada
Int. Med.
- Berlin, Leonard**
M.D. U. of Illinois
Diag. Rad. & Nuc. Med.
- Bernard, Bryan A.**
Ph.D. Louisiana State U.
Psy./Soc. Sc.
- Bernard, Linda**
M.S. Rush U.
O.R. & Surg. Nsg.
- Bernat, John**
J.D. Chg-Kent Col. of Law
Hlth. Syst. Mgt.

- Berndt, Sheila M.**
M.B. United Kingdom
Fam. Prac.
- Berndtson, Keith**
M.D. Rush U.
Fam. Prac., Prev. Med.
- Bernfield, Jeffrey**
M.D. Rush U.
Int. Med.
- Berroya, Asuncion C.**
M.D. Philippine Is.
Int. Med. (MAC)
- Berry, Robert A.**
Psy./Soc. Sc.
- Bertuzis, Rasa**
M.P.H.. U. of Illinois
Medical Technology
- Besser, Timothy P.**
M.D. St. Louis U.
Anesthes.
- Betz, Eleanor**
B.S. I.I.T.
Prev. Med., Clinical Nutrition
- Beverly, Bert I.**
M.D. Hahnemann Med. Col.
Pediatrics (WSUB)
- Bezkorovainy, Anatoly**
Ph.D. U. of Illinois
J.D.
Biochemistry, Clinical Nutrition
- Bharani, Sakina**
M.B.B.S. India
Pediatrics
- Bharati, Saroja**
M.B.B.S. India
Pediatrics
- Bhoopal, Vasireddy**
M.B.B.S. India
M.D. India
Fam. Prac. (CH)
- Bhutto, Zahida R.**
M.B.B.S. Pakistan
Cv.T. Surg
- Biala, Gerald E.**
M.S. Rush U.
O.R. & Surg. Nsg
- Bice, Michael K.**
M.D. Australia
Int. Med.
- Bick, Joseph**
M.D. U. of Michigan
Int. Med.
- Bick, Richard H.**
M.D. Northwestern U.
Fam. Prac.
- Bicknese, Donna**
B.S. Northern Illinois U.
Int. Med.
- Bidani, Anil**
M.B.B.S. India
Int. Med. Pediatrics
- Bieber, Eric J.**
M.D. Loyola U. of Chicago
Ob. & Gyne.
- Bieliauskas, Linas**
Ph.D. Ohio U.
Psy./Soc. Sc.
- Bielinski, Kenneth B.**
M.D. Chicago Medical Sch.
Dermatology
- Bielinski, Stefan**
M.D. Loyola U. of Chicago
Dermatology
- Bieniarz, Andre**
M.D.
Ob. & Gyne
- Bigger, Harold**
M.D. Indiana U.
Pediatrics
- Billhardt Jr, Roger A.**
M.D. Loyola U. of Chicago
Int. Med.
- Billman, Daniel O.**
M.D. Hahnemann Med. Col.
Pediatrics (MTSN)
- Bines, Ann S.**
M.S. Rush U.
Med. Nsg.
- Bines, Steven**
M.D. Rush Medical Col.
Gen. Surg.
- Binor, Zvi**
M.D.
Ob. & Gyne
- Birnholtz, Jason C.**
M.D. Johns Hopkins U.
Ob. & Gyne.
- Biscardi, David**
Ph.D. Southern Illinois U.
Psy./Soc. Sc.
- Biscelglia, Michael**
Ph.D. U. of Massachusetts
Diag. Rad. & Nuc. Med.
- Bishop, Catherine L.**
B.S. Rush U.
Medical Technology
- Bishop, Jacqueline J.**
M.M. Northwestern U.
Hlth. Syst. Mgt.
- Bittar, Sami M.**
M.D. Greece
Pls. & Rec. Surg.
- Blaauw, Bernard B.**
M.D. U. of Illinois
Int. Med.
- Black, Jonathan**
Ph.D. U. of Pennsylvania
Ortho. Surg.
- Blaine, Richard M.**
M.D. Loyola U. of Chicago
Ophthalmology (SWED)
- Blair, John N.**
M.D. Indiana U./Purdue U.
Pediatrics COPL
- Blair, Kenneth M.**
M.D. Wayne State U.
Fam. Prac. (WSUB)
- Blake, Lesley Margaret**
M.B.
Psychiatry
- Blankenship, Marshall**
M.D. U. of Illinois
Dermatology
- Blankshain, Richard H.**
M.D. U. of Illinois
Ob. & Gyne. (WSUB)
- Bleck, Thomas P.**
M.D. Rush U.
Neuro. Sci. Int. Med.
- Blesch, Karen Smith**
M.S. Northern Illinois U.
Med. Nsg.
- Bliss, David F.**
M.A. U. of Chicago
M.B.A. U. of Illinois
Hlth. Sys. Mgt.
- Block, Joel A.**
M.D. U. of Washington
Int. Med.
- Block, Lenn**
M.S.Ed. Northern Illinois U.
Hlth. Syst. Mgt.
- Block, Leslie J.**
M.D. Chicago Medical Sch.
Oto. & Bronc.
- Bloom, Irving**
M.D. Chicago Medical Sch.
Int. Med.
- Bloom, Kenneth J.**
M.D. Rush U.
Pathology
- Bloom, Robert W.**
M.D. Rush U.
Psychiatry
- Blouin, Ann S.**
M.S.N. Loyola U. of Chicago
Ob. & Gyne
- Blumberg, Martin B.**
M.D. U. of Illinois
Int. Med. (SWED)
- Board, Susan G.**
M.D. U. of Illinois
Ob. & Gyne.
- Boatwright, Patricia M.**
M.D. U. of Michigan
Ob. & Gyne.
- Bobek, Christine**
M.S. Rush U.
Comm. Hlth. Nsg.

- Boente, Matthew P.**
M.D. Rush Medical Col.
Ob. & Gyne.
- Bohan, John Lynch**
M.D. Northwestern U.
Int. Med.
- Bolanos, Jose M.**
M.D. Mexico
Pathology (CH)
- Boll, Robert F.**
D.O. Chicago Col. of Osteo. Med
Fam. Prac.
- Bolton, Cornelius F.**
M.D. Meharry Med. Col.
Int. Med.
- Bolton, Edmund**
M.D. Meharry Med. Col.
Int. Med.
- Bondoc, Felipe**
M.D. Philippine Is.
Anesthes (MTSN)
- Bone, Roger C.**
M.D. U. of Arizona
Int. Med.
- Bonick Jr., James F.**
D.D.S. Loyola U. of Chicago
Gen. Surg.
- Bonomi, Philip D.**
M.D. U. of Illinois
Int. Med.
- Bormes, Thomas P.**
M.D. Loyola U. of Chicago
Urology
- Bosack, Robert C.**
D.D.S. Loyola U. of Chicago
Gen. Surg. (CH)
- Boscardin, James B.**
M.D. U. of Illinois
Ortho. Surg. (CH)
- Bosch, Albert V**
M.D. Spain
Ortho. Surg. (CH)
- Bowser, Robert L.**
M.D. U. of Oklahoma
Fam. Prac.
- Boyajian, Charles**
M.D. Northwestern U.
Int. Med.
- Boyd, Eugene**
Pharmacology
- Boyd, Kevin L.**
D.D.S. U. of Iowa
Gen. Surg.
- Boyer, Kenneth M.**
M.D. U. of Pennsylvania
Pediatrics, Immun./Micro.
- Boyer, Robert J.**
M.D. Chicago Medical Sch.
Fam. Prac. (CH)
- Boysen, Harry**
M.D. U. of Iowa
Ob. & Gyne.
- Brackett, E Boone**
M.D. Baylor U.
Ortho. Surg. (WSUB)
- Bradley, Craig**
M.D. U. of Tennessee
Pls. & Rec. Surg.
- Brady, Catherine**
B.S. Mt. St. Mary College
Occup. Therapy
- Brandabur, Melanie**
M.D. Rush U.
Neuro. Sci.
- Brandt-Guckes, Deborah**
M.S. U. of Wisconsin
Commun. Dis.
- Brant, Julius**
M.D. Chicago Medical Sch.
Fam. Prac. (CH)
- Brar, Balbir S.**
M.B.B.S. India
Int. Med.
- Braun, Bennett G.**
M.D. U. of Illinois
Psychiatry
- Braun, Donald**
Ph.D. U. of Illinois
Int. Med., Immun./Micro.
- Braun, Leonard .L**
M.D. Rush U.
Pediatrics
- Braun, Lynne**
M.S. Rush U.
Med. Nsg.
- Braverman, Berton**
Ph.D. Indiana U.
Anesthes., Physiology
- Bray, James B**
M.D. Loyola U. of Chicago
Ob. & Gyne. (CH)
- Brazley, Marsha Jane**
M.D. U. of Illinois
Pediatrics
- Bregman, Andrew**
M.D. Northwestern U.
Int. Med. CDH
- Bremer, Eric**
B.A. Millikin U.
Immun./Micro.
- Brennan, Terry E.**
M.D. Duke U.
Psychiatry
- Bressler, Judith H.**
M.D. Rush U.
Ob. & Gyne.
- Breth, George**
M.D. Austria
Int. Med. (CH)
- Breuhaus, Herbert C.**
M.D. Rush U.
Int. Med.
- Brewer III, Robert D.**
M.D. U. of Illinois
Prev. Med.
- Brian, Norma S.**
M.S.N. Indiana State U.
Med. Nsg.
- Brill, John H**
M.D. Ohio State U.
Int. Med.
- Brint, Steven U.**
M.D. Hahnemann Med. Ctr.
Neuro. Sci.
- Britton-Kuzel, Catherine**
M.D. Rush U.
Pathology
- Broadbent, Michael**
M.S. U. of California
Med. Phys.
- Brocken, Cecilia**
Ph.D. Loyola U. of Chicago
Psy./Soc. Sc., Pediatrics
- Brockman, Robert**
M.D. Loyola U. of Chicago
Gen. Surg.
- Brocks, Dietrich**
Ph.D. Germany
Biochemistry
- Broderick, Lynn**
Di. Rad. & Nuc. Med.
- Brody, Jacob A.**
M.D. SUNY Downstate Med. Ctr.
Prev. Med.
- Bromberg, Merrick J.**
D.O. Chgo Col. Osteo. Med.
Pediatrics
- Bromberger, Audrey Ann**
M.D. U. of Illinois
Ob. & Gyne.
- Broome, Marion E.**
Ph.D. U. of Georgia
Mat. Child Nsg.
- Brown Jr., Calvin R.**
M.D. Wayne State U.
Int. Med. (SRH)
- Brown, Dawn**
M.S. U. of Illinois
Mat. Child Nsg.
- Brown, Marie T.**
M.D. Rush U.
Int. Med.
- Brown, Max Douglas**
J.D. DePaul U.
Hlth. Syst. Mgt.
- Brown, Michael D.**
M.D. U. of Illinois
Int. Med.

Brown, R. Gordon

M.D. Rush U.
Int. Med.

Brown, Robert W.

Fam. Prac.

Brown, Roger

Ph.D. U of Michigan
Psy./Soc. Sc.

Brown, Suzanne

Di. Rad. & Nuc. Med.

Brown, Steven V. L.

M.D. Rush U.
Ophthalmology

Brown, William C.

M.D. U. of Cincinnati
Int. Med.

Brozenec, Sally

M.S. Rush U.
O.R. & Surg. Nsg.

Brubaker, Linda

M.D. Rush U.
Ob. & Gyne.

Brueckner, David A.

M.D. U. of Washington
Psychiatry

Brueschke, Erich

M.D. Temple U.
Fam. Prac., Physiology

Bruetman, Martin E.

M.D. Argentina
Neuro. Sci.

Brundage, Joan

M.S. U. of Colorado
Mat. Child Nsg.

Bryant, R. Samuel

M.D. U. of Nebraska
Pls. & Rec. Surg.

Buch, Piyush C.

M.B.B.S. India
Psychiatry (CH)

Bucheleres, Gunther H.

M.D. Germany
Pediatrics Int. Med.

Buchman, Aron S.

M.D. Chicago Medical Sch
Neuro. Sci.

Buck, David W.

M.D. Indiana Central U
Psychiatry

Buckingham, Richard A.

M.D. U. of Illinois
Oto. & Bronc.

Buckley, Janet

M.S. Northern Illinois U.
Med Nsg.

Buckwalter, Kathleen

Ph.D. U. of Illinois
Psychi. Nsg.

Buder, Alex

M.D. Argentina
Int. Med.

Budz, Jerome

M.D. Loyola U. of Chicago
Dermatology

Buehler, Eric Andre

M.D.
Anesthes

Buenger, Richard E.

M.D. Northwestern U.
Di. Rad. & Nuc. Med.

Buentello, Gloria N.

M.D. Mexico
Pediatrics (MTSN)

Buka, Jonathon

M.D. U. of Cincinnati
Ophthalmology

Bulger, Richard F.

M.D. U. of Illinois
Oto. & Bronc.

Bulmash, Jack Martin

M.D. U. of Illinois
Int. Med.

Burbank, Barbara Beth

M.T.S. Prot. Epis. Theo. Sem.
Relig. & Hlth.

Burck, Russell

Ph.D. Princeton Theo. Sem.
Relig. & Hlth.

Burdick, Allison L.

M.D. U. of Illinois
Fam. Prac. (WSUB)

Burstein, David, M.

M.D. U. of Minnesota Duluth
Int. Med.

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Psychiatry

Burton, Stephen A.

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M.D. U. of Oregon
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M.D. U. of Pennsylvania
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Ph.D. U. of Kansas
Oto. & Bronc., Commun. Dis.

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Pediatrics

Butler, Paula R.

M.D. Tufts U.
Int. Med. (MTSN)

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Cagan, Janyce

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Camacho, Bienvenido

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Cameron, Jeffrey

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- Cannon, Joseph P.**
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- Cannon, Robert Lee**
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- Carr, Janet**
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- Carroll, Gilbert**
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- Cartwright, Rosalind D.**
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Int. Med.
- Casey, Donald E.**
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Cocjin, Juan Tirol

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Coleman, Fay K.

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- Confino, Edmond**
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Ob. & Gyne
- Conkey, Christine**
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O.R. & Surg. Nsg.
- Conlon, Kevin**
M.D. Rush U.
Int. Med.
- Conner, Mary**
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Mat. Child Nsg.
- Connolly, Margaret**
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Med. Nsg.
- Connolly, Maureen**
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Fam. Prac.
- Conrad, Harold A.**
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Pediatrics
- Conterato, Dean**
M.D. Rush Medical Col.
Ther. Rad.
- Conway, Terrence**
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Int. Med.
- Cook, Barbara S.**
M.S. Purdue U.
Commun. Dis.
- Cook, John Q.**
M.D. Northwestern U.
Pls. & Rec. Surg.
- Cook, Richard O.**
M.D. U. of Iowa
Ob. & Gyne.
- Cook, Suzanne R.**
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Pediatrics (MTSN)
- Coon IV, John S.**
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Pathology, Immun./Micro.,
Gen. Surg.
- Cooper, Charity**
M.S.N. U. of Illinois
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Psychiatry
- Corbett, Lionel**
M.D.
Psychiatry
- Corcos, Daniel M.**
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Di. Rad. & Nuc. Med.
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- Corrigan, James V.**
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Relig. & Hlth.
- Corzatt, Richard D.**
M.D. U. of Illinois
Ortho. Surg. (CH)
- Costabile, Dominic**
D.O. Chicago Col. of Osteo. Med.
Fam. Prac.
- Costello, Kathy**
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Med. Nsg.
- Cotner, Carol Lou**
M.S. U. of Nebraska
Clinical Nutrition
- Cottrell, Thomas L. C.**
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Urology
- Couden, Trevert**
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Ortho. Surg.
- Counte, Michael**
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Hlth. Syst. Mgt., Psy./Soc. Sc.
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Pediatrics
- Countinho, Russell B.**
Pediatrics
- Coupet, Edourd**
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- Cram, Richard L.**
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Ortho. Surg.
- Crane, Ernest J.**
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Hlth. Syst. Mgt.
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Occup. Therapy
- Crawford, James W.**
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- Crayton, June**
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- Cristea, Richard L.**
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- Cronin-Stubbs, Diane**
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Geront. Nsg.
- Crosby, Daniel L.**
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Di. Rad. & Nuc. Med.
- Cruz, Sidney R.**
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Int. Med. (SWED)
- Cuadros, Hugo F.**
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Int. Med. (CH)
- Cukr, Penelope**
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Comm. Hlth. Nsg.
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Fam. Prac. (COPL)
- Cummings, Marilyn A.**
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- Cump, Norma Gonzalez**
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- Cupeles, Angela B.**
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Med. Nsg.
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Fam. Prac. (GBUR)
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D.O. Chgo Col. Osteo. Med.
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- Kaye, Bennett A.**
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- Kearns, Kevin**
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- Keenan, Ann Marie**
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- Mc Donald, Gerald**
M.D. Northwestern U.
Gen. Surg.
- Mc Eachron Patricia**
M.S.N. Northern Illinois U.
Mat. Child Nsg.
- McErlean, Jeffrey A**
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- Mc Guinness, Catherine**
M.D. U. of Illinois
Fam. Prac.
- Mc Ginnis, Patrick L.**
M.D. Northwestern U.
Int. Med.
- Mc Hale, Marnie**
M.S. Rush U.
Med. Nsg.
- Mc Hugh, Rosemary E.**
M.D. Ireland
Fam. Prac.
- Mc Intosh, David G.**
M.D. U. of Dayton
Ob. & Gyne.
- Mc Kenna, Rajalaxmi**
M.D. India
Int. Med. Pharmacology
- Mc Kenna, William W.**
M.D. Loyola U. of Chicago
Int. Med. (CH)
- Mc Kiel Jr., Charles**
M.D. Loyola U. of Chicago
Urology
- Mc Lachlan, Daniel L.**
M.D. Northwestern U.
Ophthalmology
- Mc Laughlin, Margaret**
M.D. U. of Chicago
Int. Med.
- Mc Leish, William**
M.D. Rush Medical Col.
Int. Med.
- Mc Leod, Bruce C.**
M.D. Harvard U.
Int. Med.
- Mc Mahon, Catherine A.**
B.S. U. of Illinois
Occup. Therapy
- Mc Millan, Foster L.**
M.D. U. of Illinois
Gen. Surg.
- Mc Millan, J. Charles**
M.D. U. of Illinois
Int. Med. (WSUB)
- Mc Nally, Randall E.**
M.D. St. Louis U.
Pls. & Rec. Surg.
- Mc Namara, Barry T.**
J.D. Northwestern U.
Psy./Soc. Sc.
- Mc Neil, David L.**
M.D. U. of Cincinnati
Psychiatry
- Mc Neill, Thomas**
M.D. U. of Illinois
Ortho. Surg.
- Mc Pherson, Anne**
Pediatric Nursing
- Mc Quay, Russell M.**
Ph.D.
Pathology (MTSN)
- Mead, John D.**
Ph.D. Washington State U.
Psy./Soc. Sc., Pediatrics
- Medenis, Vidvuds**
M.D. Germany
Int. Med.
- Meehan, Marjorie C.**
M.D. Johns Hopkins U.
Psychiatry
- Mehlinger-Mitchell, R.**
M.A. U. of Houston
Psychiatry
- Mehra, Patrick L.**
Int. Med.
- Mehta, Bhupatkumar N.**
M.B.B.S. India
Int. Med.
- Mehta, Munkundini**
M.B.B.S. India
Ob. & Gyne.

- Meier, Werner**
M.D. Peru
Pediatrics Ob. & Gyne
- Meisles, Jeffrey Scott**
M.D. Rush Medical Col.
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- Meisles, Lynn Deutsch**
M.D. Rush Medical Col.
Int. Med.
- Meister, Carolyn**
Psychi. Nsg.
- Meister, Michael D.**
M.D. U. of Illinois
Anesthes.
- Meiszner, John W.**
M.D. Loyola U. of Chicago
Psychiatry (CH)
- Melnick, Carol R.**
M.A. Northwestern U.
Commun. Dis.
- Melnick, Garry D.**
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Fam. Prac. (SWED)
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- Melwak, Maryalice**
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Pediatrics
- Menning, Walter R.**
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Fam. Prac. (CH)
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Pediatrics
- Mercer, Thomas Henry**
M.D. Northwestern U.
Ob. & Gyne. (WSUB)
- Merchant, Zarina I.**
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Pediatrics
- Merck, Michael P.**
M.D. U. of Minnesota
Ophthalmology
- Meredith, Paul A.**
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Int. Med.
- Merkel, Frederick K.**
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Gen. Surg.
- Merrick, Frank W.**
M.D. U. of Michigan
Ob. & Gyne.
- Merricks, James W.**
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- Merritt, Belinda**
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- Mershon, Steven**
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- Merwick, Patricia A.**
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Int. Med.
- Meserow, James A.**
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- Mesleah, George F.**
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Int. Med.
- Metha, Mansukh H.**
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Int. Med.
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- Michalski, Elizabeth**
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- Miller, Avery S.**
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Ob. & Gyne (WSUB)

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Int. Med.

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Nagaraju, Ramalingappa
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Nagel Jr., B. Michael
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Nageotte, Catherine
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Naidu, Vasantha
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Pediatrics

Najafi, Hassan
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Cv.T. Surg.

Nama, Prabhavathi
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Narayan, M. S. Laxmi
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Pediatrics

Narcelles-Mon, Leilani
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Int. Med. (CH)

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Int. Med.

Nasralla, Nahim H.
M.D. Honduras
Gen. Surg. (CH)

Nathan, John E.
D.D.S. Northwestern U.
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Naylor, Barbara
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Nebblett, Edwin
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Necas, Kevin J.
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Phys. Med. & Rhb.

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Int. Med.

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Pediatrics, Immun./Micro.

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Fam. Prac. (CH)

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Nelson, Jeffrey A.
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Int. Med.

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Nelson, Karen B.
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Neri Jr., Gilberto S.
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Prev. Med. Int. Med.

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- Newman, J. Christopher**
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Hlth. Syst. Mgt.
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Int. Med., Fam. Prac. ((COPL))
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M.D. Wayne State U
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- Neybert, Hilary F.**
M.D. Malaya
Fam. Prac. (CH)
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Phys. Med. & Rhb.
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Int. Med.
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- Nielsen, Thomas J.**
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Oto. & Bronc
- Nighorn, Sharon**
M.S. U. of Illinois
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Ph.D. U. of Wisconsin
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Int. Med.
- Nold, Stephen**
M.D. Southern Illinois U
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Occup. Therapy
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Int. Med.
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Ophthalmology, Pharmacology
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Pharmacology
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Pediatrics (MTSN)
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Fam. Prac. (CH)
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Ob. & Gyne. (CH)
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Ophthalmology
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Int. Med. (WSUB)
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Dermatology (CH)
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- Parker, Suffenthia R.**
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Pharmacology
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Int. Med.
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- Parsons, Elenor**
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Int. Med.
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B.S. Juniata Col.
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Gen. Surg. (CH)
- Patel, Giribala R.**
M.B.B.S. India
Int. Med.
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M.D. India
Int. Med. (MTSN)
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- Patrick, Dianne**
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- Sosenko, George R.**
M.D. Chicago Medical Sch.
Urology
- Souid, Abdul-Kader**
M.D. Syria
Pediatrics
- Southwick, Harry W.**
M.D. Harvard U.
Gen. Surg.
- Sowa, Diane**
M.B.A. DePaul U
Clinical Nutrition
- Spaeth, Ralph**
M.D. Case Western Reserve U.
Pediatrics (CH)
- Speed, Curtis L.**
M.D. Rush U.
Pediatrics
- Spellberg, David Mark**
M.D. Rush U
Urology
- Sperling, Richard L.**
M.D. U. of Illinois
Pls. & Rec. Surg. (SKVH)
- Spies, Harold W.**
M.D. George Washington U
Prev. Med.
- Spieß, Bruce D.**
M.D. Rush U.
Anesthes
- Spigelman, Lilian**
M.D. Med. Col. of Pennsylvania
Psychiatry
- Spindel, David**
M.D. Chicago Medical Sch.
Ophthalmology (MTSN)
- Spinka, Harold M.**
M.D. Chicago Medical Sch.
Dermatology
- Spiro, Barbara**
M.D. Switzerland
Ophthalmology
- Splaingard, Mark L.**
M.D. U. of Illinois
Phys. Med. & Rhb.,
Pediatrics (MJ)
- Srivastava, Rajni**
M.B.B.S. India
Ob. & Gyne
- St. Clair, Doris E.**
M.D. Northwestern U.
Psychiatry
- St. Pierre, Aimee C.**
M.D. Rush, U.
Psychiatry
- Staats, David O.**
M.D. U. of Chicago
Int. Med.
- Stachowski, Michael M.**
M.D. Loyola U. of Chicago
Int. Med. (CH)
- Stagno, Anthony**
M.D. Italy
Ob. & Gyne.
- Staisz-Baczek, Maria**
M.D. Poland
Pediatrics (MTSN)
- Stalker, Jamie Lynn**
M.D. Rush U.
Int. Med.
- Stamat, Nicholas S.**
M.D. Greece
Pediatrics
- Stambolis, Vesilios**
M.D. Greece
Phys. Med. & Rhb.
- Stamler, Jeremiah**
M.D.
Int. Med.
- Stampley, Jan O.**
M.D. Rush U.
Psychiatry
- Stankiewicz, Anna M.**
M.D. Poland
Phys. Med. & Rhb. (MJ)
- Stanley, Robert E.**
M.D. U. of Illinois
Int. Med.
- Stanton, Gerald V.**
M.D. U. of Illinois
Fam. Prac. (CH)
- Staren, Edgar**
M.D. Loyola U. of Chicago
Gen. Surg.
- Starr, Stuart J.**
B.S. U. of Chicago
Ther. Rad., Med. Phys.
- Starsiak, Diane L.**
M.D. U. of Illinois
Pediatrics
- Stavinga, Ronald F.**
M.D. U. of Illinois
Int. Med.
- Stavrakos, Charalambos**
M.D. Germany
Int. Med. (CH)
- Stavrakos, Patty P.**
M.D. Heidelberg Col.
Int. Med.
- Stebbins III, Glenn**
M.A. U. of Arizona
Psy./Soc. Sc.
- Stec, Paul M.**
D.D.S. Marquette U.
Gen. Surg.
- Steed, W. David**
M.D. Northwestern U.
Psychiatry
- Steely, John W.**
M.D. U. of Nebraska
Di. Rad. & Nuc. Med. (CH)
- Stefani, Stefano S.**
M.D. Italy
Ther. Rad. (MTSN)
- Stefoski, Dusan**
M.D. Yugoslavia
Neuro. Sci.
- Stein, Robert**
M.D. Austria
Pathology
- Stein, Robert M.**
M.D. Chicago Medical Sch.
Ophthalmology
- Stein, Robert N.**
M.D. Chicago Medical Sch.
Int. Med. (CH)
- Stein, Robert W.**
M.D. Rush U.
Neuro. Sci.
- Stein, Zepahniah**
B.S. U. of Michigan
Pharmacology

Steinbach, Pamela T.

M.S. Rush U.
Geront. Nsg.

Steinecker, Gary A.

M.D. Loyola U. of Chicago
Int. Med. (CH)

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Int. Med.

Steiner, Monica

Phys. Med. & Rthb

Steinhauser, Janice R.

M.D. U. of Illinois
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Steinmetz, Clara Helen

M.D. Rush U.
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Stemer, Alexander A.

M.D. U. of Illinois
Int. Med.

Stephens, Alan L.

M.D.
Gen Surg

Stern, Dean S.

D.P.M. II. Col. Podiatric Med
Ortho. Surg

Stetson, John B.

M.D. Harvard U
Anesthes.

Stevens, Kathleen

M.S. Rush U
Med. Nsg.

Stevens, Marietta

M.N. U. of Washington
Psychi. Nsg.

Stewart, James D.

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Stockton, Donna L.

M.D.
Dermatology

Stohle, Michael R.

D.D.S. U. of Illinois
Gen. Surg.

Stoioff, Madona

M.A. Kent State U
Commun. Dis.

Stokar, Elliot

M.D.
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Stokes, Valeria J.

M.S.N. U. of Nebraska
Mat. Child Nsg

Stolar, Joel

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Stoops, Joyce

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O.R. & Surg. Nsg. (GRNT)

Storlie, Jean

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Clinical Nutrition, Prev. Med.

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Mat. Child Nsg.

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Ph.D. U. of Illinois
Gen. Surg.

Strauss, Lynn M.

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Int. Med.

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Gen. Surg. (LMGH)

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Dermatology

Strokosch, Gary R.

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Stone, Arvey M.

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Strote, Scott E.

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Ob. & Gyne. (CH)

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Strumpf, Andrea J.

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Strzembosz, Patricia

M.D. Loyola U. of Chicago
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Stuck, Gary D.

D.O.
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Subramani, Govindaraju

M.B.B.S. India
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Sullivan, James F.

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Neuri. Sci.

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Dermatology

T

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Takeda, Masahiro

Biochemistry

Talbert, Ellis

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Tanck, Erik N.

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Tarzynski, Marian S.

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Tatum, Vaughn

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Int. Med. (MTSN)

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Int. Med.

Taylor III, Samuel G.

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Int. Med.

Taylor IV, Samuel G.

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Int. Med.

Taylor, Douglas W.

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Fam. Prac. (GBUR)

Taylor, Prentiss

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Prev. Med., Int. Med.

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Relig. & Hlth.

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Templeton, Kimberly J.

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Tenta, Louis T.

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Oto. & Bronc.

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Int. Med.

Terman, Mari D.

M.B.A. Northwestern U.
Hlth. Syst. Mgt.

Thampy, Kishore J.

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Pharmacology

Thomas, Larry L.

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Immun./Micro.

Thomason Jr., Richard D.

M.D. U. of Chicago
Anesthes.

Thompson, Dennis S.

D.O. Chgo. Col. Osteo. Med.
Psychiatry

Thompson, Lee D.

Ph.D. Indiana U.
Hlth. Syst. Mgt.

Thompson, Michael J.

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M.D. U. of Illinois
Int. Med. (GBUR)

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M.D. Loma Linda U.
Fam. Prac. (BETH)

Thomson, Andrew

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Int. Med.

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Int. Med.

Thonar, Eugene

Ph.D. South Africa
Biochemistry, Int. Med.

Thorp, Stephanie E.

M.M. Northwestern U.
Hlth. Syst. Mgt.

Tiesenga, Marvin

M.D. U. of Illinois
Gen. Surg. (WSUB)

Tilkin, Jeffrey M.

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Psychiatry

Timm, Stuart

M.D. Indiana U.
Int. Med.

Timmerman, Gary L.

M.D. U. of Washington
Gen. Surg.

Timmons, John A.

M.D. Rush U.
Int. Med.

Tio, Diego U.

M.D. Philippine Is.
Anesthes. (MTSN)

Tiruvury, Anuradha

M.B.B.S. India
Pediatrics (MTSN)

Tolliver, Roland A.

Ortho. Surg.

Tomayko, John F.

M.D. U. of Pittsburgh
Int. Med.

Tomeo, Jay

M.D. Loyola Marymount U
Fam. Prac.

Tonino, Pietro M.

M.D. Northwestern U
Ortho. Surg.

Topel, Jordan L.

M.D. Loyola U. of Chicago
Neuro. Sci.

Torczynski, Elise

M.D. U. of Wisconsin
Ophthalmology

Tordella, Lydia

M.S. DePaul U
Geront. Nsg.

Torres, Hernando

M.D. Colombia
Neuro. Surg. (MTSN)

Trafimow, Jordan H.

M.D. U. of Illinois
Ortho. Surg.

Trager, Eugene P.

M.D. U. of Illinois
Psychiatry

Trakas, Demetrius A.

M.D. Greece
Psychiatry

Trautenberg, Joel

M.D.
Pediatrics

Trenholme, Gordon M.

M.D. Marquette U
Int. Med., Pharmacology

Tresley, Jack

M.D. U. of Illinois
Ophthalmology (MTSN)

Trieglaff, Suzanne G.

M.S. Rush U
Mat. Child Nsg.

Trivedi, Dinker A.

M.B.B.S. India
Int. Med.

Troiano, Richard S.

M.D. Hahnemann Med. Ctr.
Ortho. Surg.

Troyk, Philip R.

Ph.D. U. of Illinois
Neuro. Surg.

Trubitt, Mitchell J.

M.D. U. of Illinois
Int. Med. (MTSN)

Trubow, Leslie N.

M.D. Rush Medical Col.
Pediatrics

Truchly, Vasil

M.D. Germany
Ob. & Gyne.

Trufant, John E.

Ed.D. U. of Florida
Hlth. Syst. Mgt.

Trufant, Judy

M.N. U. of Florida
Mat. Child Nsg.

Trusewych, Timothy B.

D.O. Chgo Col. Osteo. Med.
Int. Med.

Tsai, An Kon

M.D. China-Taiwan
Fam. Prac. (CH)

Tsai, Houn

M.D. China-Taiwan
Anesthes. (CH)

Tucker, W. Randolph

M.D. U. of Cincinnati
Int. Med.

Tulsky, David S.

Ph.D. U. of Illinois
Psy./Soc. Sc.

Tuman, Kenneth J.

M.D. U. of Illinois
Anesthes.

Tunestam, Nils J.

M.D. Sweden
Pediatrics (SWED)

Turek, Louis H.

M.D. Chicago Medical Sch.
Fam. Prac. (MTSN)

Turner, David A.

M.D. U. of Chicago
Di. Rad. & Nuc. Med.

Turner, Irene R.

M.T. Radcliffe U.
Prev. Med.

Turner, Sandra M.

M.D. U. of Chicago
Pediatrics

Turner, Thomas M.

D.V.M. Auburn U.
Ortho. Surg.

Twiss, Alston C.

M.D. Temple U.
Int. Med.

Tyner-Hanrahan, Carol

B.S. U. of Illinois
Occup. Therapy

Tyszka, Thomas S.

M.D. U. of Illinois
Int. Med.

Tzu, Cheng

Ob. & Gyne.

U

Uebele, Joan A.

M.S. U. of Illinois
O.R. & Surg. Nsg.

Ulsafer-VanLanen, Jane

M.S. U. of Colorado
Psychi. Nsg.

Upadhyaya, Varsha V.

M.B.B.S. India
Ob. & Gyne. (MTSN)

Upadhyaya, Vinod P.

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Pediatrics (CH)

Urbanski, Pam

M.S.N. Texas Womans U.
O.R. & Surg. Nsg.

Urban, John

M.S. Carnegie Mellon U.
Ther. Rad., Med. Phys.

Uretz, Eugene F.

M.S. U. of Chicago
Int. Med.

Uriel, Roberto

M.D. Cuba
Pediatrics

V

Valdivia, Juan F.

M.D. U. of Chicago
Anesthes.

Van Amerongen, Derek

M.D. Rush U.
Ob. & Gyne.

Van Anrooy, Michael D.

M.D. Rush U.
Ortho. Surg.

Van Peenen, Peter F.

M.D. U. of San Francisco
Prev. Med.

Van Valen, Phebe

Ph.D. Columbia U.
Int. Med.

Vanderberg Dent, Susan

M.D. U. of Illinois
Fam. Prac. (CH)

Vanderlaan, Burton F.

M.D. U. of Illinois
Int. Med. (CH)

Vasan, Ushanalini

M.B.B.S. India
Pediatrics

Vazquez, Juan J.

M.D. Spain
Psychiatry

Velada, Pedro I.

M.D. Philippine Is.
Pediatrics (CH)

Veldman, Marie A.

M.D., Ph.D. Spain
Gen. Surg.

Velde, Therese

Commun. Dis.

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D.O. Chicago Col. of Osteo. Med.
Fam. Prac.

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Venkataraman, Munusamy
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Immun./Micro., Int. Med. (MTSN)

Vento, Elio G.
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Ob. & Gyne (WSUB)

Venzon, Michael A.
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Hlth. Sys. Mgt., Phys. Med. & Rhab

Vercelli, Kenneth
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Vercoe, James L.
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Int. Med. (MTSN)

Verner, James J.
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Vester, S. Russel
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Cv. T. Surg.

Vidaver-Cohen, Doris
M.A. U. of Michigan
Neuro. Sci.

Vidinli, Mustafa
M.D. Turkey
Int. Med. (COPL)

Viernes, Ann L.
M.S. DePaul U.
Medical Technology

Vierling, Timothy E.
M.D. St. Louis U
Ob. & Gyne.

Vinci, Samuel
D.P.M. Ill. Col. Podiatric Med
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Vivar, Zenaida
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Psychiatry (CH)

Vogel, Lawrence C.
M.D. U. of Illinois
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Volek, Paul
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Psychiatry (CH)

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O.R. & Surg. Nsg.

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W

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Wafai, A Yaser
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Wagner, Robert H.
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Wagner, William A.
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Fam. Prac.

Waidzunus, Thomas Lee
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Medical Technology

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Occup. Therapy

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Pediatrics (LMGH)

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Oto. & Bronc.

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Ophthalmology

Walraven, Ellen S.
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Walsh, Patricia A.
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Wanczyk, Teresa
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Ob. & Gyne.

Warren, Dawn Maria
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Warren, William H.
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Cv.T. Surg., Pathology

Washburn, Thomas B.
Cv.T. Surg.

Waskin, Hetty Anne
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Int. Med.

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M.D. Howard U.
Fam. Prac. (BETH)

Watson, Linda

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Watts Jr., Risher

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Fam. Prac.

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Hlth. Syst. Mgt.

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Biochemistry Ob. & Gyne.

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Weinstein, Susan

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Weisberg, Mitchell R.

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Weiser, Stephen J.

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Hlth. Syst. Mgt.

Weisman, Nancy E.

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Weiss, Raymond, P.

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Ph.D. U. of Illinois
Immun./Micro

Werhane, Mary Jo

M.S. U. of Illinois
Med. Nsg.

West, James Ward

M.D. Loyola U. of Chicago
Psychiatry

Westerman, Maxwell P.

M.D. U. of Louisville
Int. Med. (MTSN)

Westheimer, Ruth

M.D. Rush U.
Psychiatry

Wetzel, Allan B.

Ph.D. U. of Kentucky
Phys. Med. & Rhb. Psy./Soc. Sc.

Weyrens, Francis P.

M.D. St. Louis U.
Ob. & Gyne. (GBUR)

Wheat, Michael L.

M.D.
Int. Med.

Whisler, Kenneth E.

Ph.D. U. of Wisconsin
Biochemistry, Medical Technology

Whisler, Walter

M.D., Ph.D. U. of Illinois
Neuro. Surg., Neuro. Sci.
Biochemistry

Whitaker, Ronald H.

M.S. Ohio State U.
Hlth. Syst. Mgt.

White, Donald R.

M.D. Baylor Col. of Med.
Pediatrics (CDH)

White, Paula

M.S. Rush U.
Med. Nsg.

Whitmore, Elizabeth

M.S. Rush U.
O.R. & Surg. Nsg.

Whitney, Carolyn

M.S.I.S. Roosevelt U.
Hlth. Sys > Mgt.

Wichter, Melvin

M.D. New York Med. Col.
Neuro. Sci. (CH)

Wickham, Rita

M.S. Northern Illinois U.
Med. Nsg.

Wickramasinghe, M.

M.B.B.S. Ceylon
Pediatrics (MTSN)

Wideman-Levin, Marilyn

M.S.N. St. Louis U.
Psychi. Nsg.

Wiener, Alane L.

Ph.D. U. of W. Virginia
Psy./Soc. Sc.

Wigder, Herbert N.

M.D. U. of Wisconsin
Fam. Prac. (CH)

Wigton, Thomas R.

M.D. Med. Col. of Ohio
Ob. & Gyne.

Wilbanks, George D.

M.D. Duke U.
Ob. & Gyne.

Wilcox, Kenneth

Int. Med. (CH)
M.D. U. of Illinois

Wildblood, Ann R.

M.S. Va. Commonwealth U.
Comm. Hlth. Nsg.

Wilkinson, Steven B.

M.D. U. of Missouri
Neuro. Surg.

Willander, Duane A.

M.D. Northwestern U.
Ortho. Surg. (GBUR)

Williams, Barbara L.

Ph.D. Rice U.
M.D. Indiana U./Purdue U.
Int. Med.

Williams, E. Jane

Ph.D. Ohio State U
Prev. Med.

Williams, James M.

Ph.D. Indiana U./Purdue U
Anatomy

Williams, James W.

M.D. U. of Tennessee
Gen. Surg.

Williamson, Mark B. Jr.

B.A. Northwestern U
Ortho. Surg.

Williamson, Wayne C.

M.D. U. of Cincinnati
Int. Med.

Wilson, Diana E.

M.D. U. of Texas
Neuro. Surg.

Wilson, Robert S.

Ph.D. Wayne State U
Psy./Soc. Sc.

Wing, Herman

M.D., L.L.B. U. of Texas
Int. Med.

Winkels, Kathy

M.A. Western Michigan U
Commun. Dis.

Winston, Leonard

D.P.M. II. Col. Podiatric Med
Ortho. Surg.

Winter, Paul L.

M.D. Northwestern U
Int. Med.

Winterfield Jr., Roland

M.D. Northwestern U
Int. Med. (CH)

Wirtshafter, Robert

M.D. U. of Chicago
Pediatrics (CH)

Wisby, Marian

M.S.N. Rush U
Geront. Nsg.

Wistenberg, Lexy A.

M.D. U. of Wisconsin
Int. Med.

Witkowski, Leon J.

M.D. Northwestern U
Gen. Surg.

Witkowski, Robert

M.D. Rush U.
Gen. Surg.

Witt, Thomas R.

M.D. Northwestern U
Gen. Surg.

Wittert, Donna

M.S. U. of Illinois
O.R. & Surg. Nsg.

Wiznitzer, Israel

M.D. Northwestern U.
Int. Med.

Wojcik, Edward

M.D. Loyola U. of Chicago
Ortho. Surg. (LMGH)

Wolf, Mark R.

D.D.S. U. of Illinois
Oto. & Bronc.

Wolfe, Caroline M.

M.D. U. of Chicago
Int. Med.

Wolfe, Charles K.

M.D. U. of Pennsylvania
Int. Med.

Wolff, John R.

M.D. Northwestern U.
Ob. & Gyne. Psychiatry

Woolf, Howard L.

M.D. Loyola U. of Chicago
Ob. & Gyne.

Wolff, Marcy E.

M.D. U. of California
Fam. Prac.

Wolk, Barry M.

M.D. U. of Cincinnati
Mat. Child Nsg.

Wolin, Preston M.

M.D. U. of Illinois
Ortho. Surg. (CH)

Wolter, Janet

M.D. U. of Illinois
Int. Med.

Wong, Alfonso

M.D. Philippine Is.
Anesthes. (CH)

Wong, Fuk Chun Alan

M.D. Rush U.
Pediatrics

Wong, Milton K.

M.D. U. of San Francisco
Pediatrics

Wong, Paul W.

M.D. Hong Kong
Pediatrics Int. Med.

Wood, Joseph P.

M.D. U. of Illinois
Fam. Prac. (CH)

Wood, Mary Katherine

M.D. Southern Illinois U.
Ob. & Gyne.

Wood, Nancy B.

Ph.D. Rutgers U.
Ob. & Gyne.

Woodard, David O.

M.D. Syracuse
Gen. Surg.

Woodbury Jr., George R.

Dermatology

Wool, Norman L.

M.D. Chicago Medical Sch.
Gen. Surg.

Woronowicz, Andrew

M.D. Poland
Anesthes.

Wright, Donovan G.

M.D. U. of Minnesota
Psychiatry

Wright, Robert B.

M.D. U. of Illinois
Neuro. Sci.

Wu, Chang De

M.D. China
Ortho. Surg.

Wu, Dickson S.

M.D. Indian U. of Penna.
Anesthes.

Wyhinny, George

M.D. U. of Illinois
Ophthalmology

Wyhinny, Patricia

M.D. Rush Medical Col.
Dermatology

Y

Yadava, Ved Prakash

M.D. India
Int. Med. (GRNT)

Yamamoto, Leslie T.

M.D. Rush U.
Fam. Prac.

Yang, Sen-Lian

M.D.
Ob. & Gyne.

Yaremko, Lisa M.

M.D. Rush Medical Col.
Pathology

Yasoff, William A.

M.D. Northwestern U
Int. Med.

Yballe, Sonia B.

M.D. Philippine Is.
Psychiatry (MTSN)

Yeandel, Lauren

M.S. U. of Michigan
Med. Nsg.

Yedor, Katherine

Commun. Dis.

Yee, Martin J.

M.D. Rush U
Phys. Med. & Rthb.

Yellen, Harry J.

M.D. Loyola U. of Chicago
Int. Med. (MTSN)

Yellen, Steven F.

M.D. Chicago Medical Sch.
Int. Med. (MTSN)

Ying, David P.

M.D. U. of Pennsylvania
Di. Rad. & Nuc. Med. (CH)

Z

Yisak, Solomon

M.D. Italy
Int. Med.

Yokley, Sharon

M.D. U. of Illinois
Int. Med.

Yokoo, Teiriki

M.D. Rush U.
Phys. Med. & Rhab.

Yon, Lois

M.S. Rush U.
Geront. Nsg.

Yordan, Edgardo

M.D. U. of Maryland
Ob. & Gyne.

Yoshizawa, Ellen H.

B.S. Rush U.
Medical Technology

Yosko, Kathleen

M.N. U. of Pittsburgh
Geront. Nsg.

Young, Carolyn V.

M.A. Northwestern U.
Oto. & Bronc., Commun. Dis.

Young, J. Norman

M.D. Northwestern U.
Gen. Surg. (LMGH)

Young, Michael

Ph.D. Adelphi U.
Psy./Soc. Sc. Psychiatry

Young, Stephanie, A.

M.D. Loyola U. of Chicago
Pathology

Younger, Susan C.

M.D. U. of Mississippi
Psychiatry

Yrapsis, Nicholas

M.D. Greece
Ob. & Gyne. (CH)

Yuen, Benjamin Hak-Keu

M.D. Taiwan
Int. Med.

Yung, Shirley

M.D.C.M. McGill Univ.
Fam. Prac.

Zacharia, Dubravko J.

M.D. Yugoslavia
Ob. & Gyne.

Zadylak, Robert G.

M.D. Loyola U. of Chicago
Psychiatry

Zahz, Merrill

M.D.
Int. Med. (MTSN)

Zajacka, John M.

M.D. Loyola U. of Chicago
Psychiatry

Zakko, Hazim Y.

M.B., B.Ch. Iraq
Psychiatry

Zallik, Ned I.

M.D. Ch.C. Medical Sch.
Int. Med.

Zaneveld, Lourens

D.V.M. U. of Georgia
Ph.D. U. of Georgia
Ob. & Gyne., Biochemistry

Zaremski, Miles J.

J.D. Case Western Reserve U.
Hlth. Syst. Mgt.

Zarrabi, Jalil

M.D. Iran
Pediatrics

Zaytsev, Polina

M.D. U.S.S.R.
Pathology

Zbilut, Joseph P.

D.N.Sc. Rush U.
O.R. & Surg. Nsg., Physiology

Zeitz, Howard J.

M.D. U. of Illinois
Immun./Micro., Int. Med. (GRNT)

Zelinger, Allan B.

M.D. Rush U.
Int. Med. (CH)

Zelinger, Bernard B.

M.D. Germany
Ob. & Gyne. (CH)

Zeller, Janice M.

Ph.D. U. of Illinois
Med. Nsg., Immun./Micro.

Zervopoulos, Evangelia

M.D. Greece
Pediatrics (SWED)

Ziarko Jr., Mitchell

M.D. U. of Illinois
Int. Med.

Zeigler, Howard L.

M.D. S.U.N.Y.
Int. Med.

Zielinski, Dorothy A.

M.D. Rush U.
Fam. Prac.

Zielinski, Gail M.

M.S. Rush U.
Med. Nsg.

Zieserl, Robert M.

M.S. Loyola U. of Chicago
Hlth. Sys. Mgt.

Zimmerman, J.C. Chava

M.D. Wayne St. U.
Fam. Prac.

Zimmerman, Roger P.

Ph.D. Yale U.
Neuro. Sci., Physiology

Zitek, Russell

M.D. U. of Illinois
Fam. Prac. (LMGH)

Zitter, Robert E.

Ph.D. West Virginia U.
Fam. Prac. Psy./Soc. Sc. (CH)

Zoldan, Jack

M.D. U. of Illinois
Int. Med.

Zonner, Steven

D.O. Chicago Col. of Osteo. Med.
Fam. Prac., Ortho. Surg.

Zuckerman, Victor

D.O. Phila. Col. Osteo. Med.
Pediatrics

Zupsich, Carolee

M.S.N. St. Louis
Mat. Child Nsg.

Zurbrugg, Jo B.

M.D. Washington U.
Pediatrics

ENDOWED CHAIRS

Endowed Chairs at Rush-Presbyterian-St. Luke's Medical Center

Endowment provides the margin for excellence at Rush University as generous and far-sighted giving helps build leadership among the faculties. Commitments for endowed chairs provide the donor with the satisfaction of enabling Rush faculty to advance education and research in the conquest of disease, and make it possible for Rush University to continue to attract scientists and educators of the highest quality. There are now 39 endowed chairs at the Medical Center, more than half of them fully funded.

The following chairs are currently occupied:

John W. and Helen H. Watzek Chair of Biochemistry

Established in 1965 by John W. Watzek, Jr., an industrialist, to honor the memory of his parents. The decision grew out of a relationship with the Medical Center and with his physician, the late Richard B. Capps, M.D.

Holder: Klaus E. Kuettner, Ph.D.

The John W. and
Helen H. Watzek
Professor of Biochemistry
Chairman of the Department of
Biochemistry

Josephine Dyrenforth Chair of Gastroenterology

Established in 1968 by a bequest of Mrs. Josephine Dyrenforth in appreciation of the care given her husband, Arthur, a well known Chicago attorney.

Holder: Seymour M. Sabesin, M.D.

The Josephine Dyrenforth
Professor of Gastroenterology

Woman's Board Chair of Pediatrics

Established in 1968 by the Woman's Board of Rush-Presbyterian-St. Luke's Medical Center as the first endowed chair of pediatrics at any hospital in the nation and the first major endowment by the Woman's Board.

Holder: Samuel P. Gotoff, M.D.

The Woman's Board Professor
of Pediatrics
Chairman of the Department of
Pediatrics.

Elodia Kehm

Chair of Hematology

Established in 1969 through a bequest by Mrs. Kehm in honor of her husband to further research into the cause, prevention and cure of cancer and related diseases.

Holder: William H. Knospe, M.D.

The Elodia Kehm Professor
of Hematology

Willard L. Wood, M.D.

Chair of Rheumatology

Established in 1969 through a bequest of the late Charles S. Pillsbury, his family and other grateful patients of Willard L. Wood, M.D. Dr. Wood was a graduate of Rush Medical College and, as a physician and faculty member, provided over 55 years of service to the Medical Center.

Holder: Thomas J. Schnitzer, M.D., Ph.D.

The Willard L. Wood, M.D.,
Professor of Rheumatology

John M. Simpson

Chair of Obstetrics and Gynecology

Established in 1970, this chair recognizes the philanthropy of John M. Simpson, a trustee of the Medical Center for 37 years.

Holder: George D. Wilbanks, Jr., M.D.

The John M. Simpson Professor
of Obstetrics and Gynecology
Chairman of the Department of
Obstetrics and Gynecology

Harry Boysen, M.D.,

Chair of Obstetrics and Gynecology

Established in 1970 by gifts from the Woman's Board, the Trustees and grateful patients of Harry Boysen, M.D., who dedicated 46 years of his career to Rush-Presbyterian-St. Luke's Medical Center.

Holder: Lourens J. D. Zaneveld,

D.V.M., Ph.D.

The Harry Boysen, M.D., Professor of
Obstetrics and Gynecology

**Ralph C. Brown, M.D.,
Chair of Internal Medicine**

Established in 1970 in memory of his father by R. Gordon Brown, M.D., also a graduate of Rush Medical College. Dr. Brown served as professor of medicine and a medical staff member of Presbyterian-St. Luke's Hospital until his death in 1954.

Holder: Roger C. Bone, M.D.,
The Ralph C. Brown Professor of
Internal Medicine
Chairman of the Department of
Internal Medicine

**Thomas J. Coogan, Sr., M.D.,
Chair of Immunology**

Established in 1971 in tribute to the late Thomas J. Coogan, M.D., and in memory of Benjamin F. Lindheimer by his daughter, Marjorie Lindheimer Everett, who recognized Dr. Coogan's outstanding service to the medical profession and encouraged the growth of research in the discipline of immunology at Rush.

Holder: Henry Gewurz, M.D.
The Thomas J. Coogan, Sr., M.D.,
Professor of Immunology
Chairman of the Department of
Immunology/Microbiology

**James R. Lowenstine
Chair of Internal Medicine**

Created in 1971 by the Lowenstine Foundation, the family of Mr. Lowenstine and Mr. Lowenstine himself, to promote the philosophy of patient-centered care particularly the clinical training of the family doctor.

Holder: Stuart Levin, M.D.
The James R. Lowenstine Professor
of Internal Medicine

**Stanley G. Harris, Sr.,
Chair of Psychiatry**

Established in 1972 as a lasting memorial to the late Stanley G. Harris, Sr., who provided Rush-Presbyterian-St. Luke's with leadership and philanthropy for many years.

Holder: Jan Fawcett, M.D.
The Stanley G. Harris, Sr.,
Professor of Psychiatry
Chairman of the Department
of Psychiatry

**Harriet Blair Borland
Chair of Pathology**

Established in 1972 by Chauncey B. Borland, a Trustee of Rush-Presbyterian-St. Luke's Medical Center for many years, in memory of his mother who shared his interest in clinical pathology and supported the same interests during her lifetime.

Holder: Ronald S. Weinstein, M.D.
The Harriet Blair Borland
Professor of Pathology
Chairman of the Department
of Pathology

**Stanton A. Friedberg, M.D.,
Chair of Otolaryngology and
Bronchoesophagology**

Established in 1973 by the family and friends of Stanton A. Friedberg, M.D., a preeminent physician and teacher of Rush Medical College and president of the medical staff from 1964 to 1966.

Holder: David D. Caldarelli, M.D.
The Stanton A. Friedberg, M.D.,
Professor of Otolaryngology
and Bronchoesophagology
Chairman of the Department
of Otolaryngology and
Bronchoesophagology

**Jack Fraser Smith
Chair of Surgery**

Established in 1974 by Bertha Spaeti Smith to recognize and honor, in memory of her husband, outstanding physicians and surgeons in the Department of General Surgery.

Holder: James W. Williams, M.D.
The Jack Fraser Smith
Professor of Surgery
Director of the Section of
Transplantation, Department
of General Surgery

**Francis N. and Catherine O. Bard
Chair of Physiology**

Established in 1975 by bequest of Francis N. Bard, who took an active interest in the Medical Center, an interest which his family continues.

Holder: Robert S. Eisenberg, Ph.D.
The Francis N. and
Catherine O. Bard Professor
of Physiology
Chairman of the Department
of Physiology

**William A. Hark, M.D.-Susan G. Swift
Chair of Orthopedic Surgery**

Established in 1977, the Hark-Swift Chair brings together the names of a physician and patient as an abiding reminder of that special relationship. It was funded by family and friends of the late William A. Hark, M.D., the estate of Susanne G. Swift--a former patient of Dr. Hark--and members of the Department of Orthopedic Surgery.

Holder: Jorge O. Galante, M.D., D.M.Sc.
The Hark-Swift Professor
of Orthopedic Surgery
Chairman of the Department
of Orthopedics

**Claude N. Lambert, M.D. - Helen S.
Thomson Chair in Orthopedic Surgery**

Established in 1978 and endowed through the generous bequest of Helen S. Thomson, a patient, long-time friend and neighbor of the late Claude N. Lambert, M.D., who served Rush-Presbyterian-St. Luke's for 40 years and who was a leader in setting the Department of Orthopedic Surgery on the course which has brought it international stature

Holder: Thomas P. Andriacchi, Ph.D.
The Claude N. Lambert, M.D.
Helen S. Thomson Chair in
Orthopedic Surgery

**Robert C. Borwell, Sr.
Chair of Neurology**

Established in 1978 by Robert C. Borwell, Trustee of Rush-Presbyterian-St. Luke's Medical Center, to set an example for others to follow for the endowment needs of the new Rush University and to support the research and treatment of multiple sclerosis and related diseases.

Holder: Floyd A. Davis, M.D.
The Robert C. Borwell, Sr.
Professor of Neurology
Director of the Multiple
Sclerosis Center

**Samuel G. Taylor III, M.D.,
Chair of Oncology**

Established in 1978 by friends, patients and colleagues, this Chair honors a distinguished leader in medicine, a 1932 Rush Medical College graduate, a founder of the Illinois Cancer Council and an active participant in the National Institutes of Health and the American Cancer Society.

Holder: Jules E. Harris, M.D.
The Samuel G. Taylor III, M.D.,
Professor of Oncology
Director of the Rush Cancer Center

**John L. and Helen Kellogg
Dean of the College of Nursing**

Established in 1978 by the John L. and Helen Kellogg Foundation in the College of Nursing as part of a munificent \$4.5 million gift which also named the Kellogg Pavilion and created the John L. and Helen Kellogg National Center for Excellence in Nursing at the Medical Center as a memorial to Mr. and Mrs. Kellogg.

Holder: Kathleen Gainor Andreoli, D.S.N.

The John L. and Helen Kellogg
Dean of the College
of Nursing
Vice President for Nursing
Affairs

**Helen Shedd Keith
Chair of General Surgery**

Established in 1980 in tribute to Helen Shedd Keith, first a member of St. Luke's Hospital Woman's Board and later of the combined boards of both Presbyterian and St. Luke's Hospitals, a founder of the Anchor Cross Society and a generous donor to Rush-Presbyterian-St. Luke's Medical Center. The chair was endowed by her daughter and son-in-law, Mary and John Bent. Bent is a Life Trustee of the Medical Center.

Holder: Steven G. Economou, M.D.
The Helen Shedd Keith
Professor of General Surgery
Chairman of the Department
of General Surgery

**Clark Wylie Finnerud, M.D.,
Chair of Dermatology**

Established in 1981 by Mrs. Clark W. Finnerud in honor of her late husband, distinguished alumnus and professor of Rush Medical College and towering figure in the field of American dermatology.

Holder: Frederick D. Malkinson, M.D.,
D.M.D.
The Clark Wylie Finnerud, M.D.
Professor of Dermatology
Chairman of the Department
of Dermatology

**William Gottschalk, M.D.,
Chair of Anesthesiology**

Established in 1984 by family, friends, patients and colleagues to honor the late William Gottschalk, M.D., internationally recognized authority in anesthesiology and gynecology, and associate chairman of the Department of Anesthesiology from 1975 to 1984.

Holder: Anthony D. Ivankovich, M.D.,
The William Gottschalk
Professor of Anesthesiology
Chairman of the Department
of Anesthesiology

**The Coleman/Fannie May Candies
Foundation Chair**

Established in 1985 through the magnificent commitment of \$3 million from the Coleman/Fannie May Candies Foundation, Inc., this endowment includes the directorship of The Thomas Hazen Thorne Bone Marrow Transplant Center, as well as endowment for research efforts and for expansion of the current facilities.

Holder: Herbert Kaizer, M.D., Ph.D.
The Coleman/Fannie May
Candies Foundation Professor

**Woman's Board
Chair of Child Psychiatry**

Established in 1985 by the Woman's Board of Rush-Presbyterian-St. Luke's Medical Center to serve the needs of children of the community.

Holder: Elva Poznanski, M.D.
The Woman's Board Professor of
Child Psychiatry

The CIBA-GEIGY Chair of Biochemistry

Established in 1987 by CIBA-GEIGY, the American arm of the multi-national chemical and pharmaceutical firm headquartered in Switzerland, with hopes of conquering arthritis as one of mankind's most widespread afflictions and as an example of the productive relationships between industry and academic medicine.

Holder: James H. Kimura, Ph.D.
The CIBA-GEIGY Professor of
Biochemistry

**Charles J. and Margaret Roberts
Chair of Preventive Medicine**

This Chair was established in 1987 through a bequest from Mr. and Mrs. Charles J. Roberts, patients and long-time friends of George W. Stuppy, M. D., a member of the medical staff for almost 50 years. Their generosity endowed the Charles J. and Margaert Roberts Fund for Preventive Medicine which supports the Chair and other programs at the Medical Center.

Holder: James A. Schoenberger, M.D.
Charles J. and Margaret
Roberts Professor of
Preventive Medicine
Chairman of the Department of
Preventive Medicine

**Woman's Board
Chair of Child Psychiatry**

Established in 1985 by the Woman's Board of Rush-Presbyterian-St. Luke's Medical Center to serve the needs of children of the community.

Holder: Elva Poznanski, M.D.
The Woman's Board Professor of
Child Psychiatry

**Catharine and R. Winfield Ellis -- Philip
N. Jones, M.D. Chair of University Affairs**

Through this chair, established in 1988, the Ellis family honored Philip N. Jones, M.D., senior attending physician in internal medicine, and provided for financial assistance for students of Rush University, especially those enrolled in the colleges of medicine and nursing.

Holder: John E. Trufant, Ed.D.
The Catharine and Winfield Ellis --
Phillip N. Jones, M.S., Professor of
University Affairs

In addition, the following chairs are either partially or fully endowed but are currently unoccupied:

Jean Schweppe Armour
Chair of Neurology

This, the first endowed chair at a private hospital in this country, was established in 1963 as memorial to Jean Schweppe Armour by A. Watson Armour III, other members of the Armour family, and by her friends as a tribute to her leadership as a volunteer for the Medical Center and as a member of its Woman's Board.

Holder: Ruggero Fariello, M.D.
The Jean Schweppe Armour
Professor of Neurology
Chairman of the Department of
Neurology

Richard B. Capps, M.D.,
Chair of Hepatology

Established in 1968 by friends and patients in recognition of the contributions of Richard B. Capps, M.D., to medicine, particularly his pioneering research and study of hepatitis.

Chair of Cardiovascular-Thoracic
Surgery

Established under the leadership of John Bent, Trustee, in 1970.

Bishop Anderson
Chair of Religion and Medicine

Established in 1970 through the philanthropy of Mrs. Laurance Armour, Sr., and the leadership of Bishop Charles P. Anderson, Bishop of the Episcopal Diocese of Chicago from 1900-1930, as an important recognition of the heritage and commitment of Rush-Presbyterian-St. Luke's Medical Center.

Holder: The Reverend Christian A.
Hovde, Ph.D., D.D.
The Bishop Anderson
Professor of Religion and
Medicine
Chairman of the Department of
Religion and Health

J. Bailey Carter, M.D.,
Chair of Cardiology

Established in 1972 by his widow, Ruth, this chair honors J. Bailey Carter, M.D., a well-known professor of cardiology on the Rush Medical College faculty from 1928 to 1938.

Max S. Sadove, M.D.,
Chair of Anesthesiology

Established in 1973 primarily by gifts from members of the Department of Anesthesiology and named in 1984 to honor Max S. Sadove, M.D., chairman of the Department of Anesthesiology from 1971 to 1979, whose leadership brought the department to international stature.

Otho S. A. Sprague
Chair of Pathology

Established in 1975 to recognize the Otho S. A. Sprague Memorial Institute which was created through the will of Otho S. A. Sprague, civic leader in Chicago at the turn of the century. Since 1938, the Otho S. A. Sprague Memorial Institute has supported research at Rush, especially through the Departments of Biochemistry, Immunology/Microbiology, and Pathology.

James B. Herrick, M.D.
Chair of Heart Research

Established in 1987 through a bequest from Mr. and Mrs. Charles J. Roberts, this Chair recognizes the significant contributions of Dr. James B. Herrick, one of the first faculty members of Rush Medical College, to cardiology and internal medicine.

James A. Campbell, M.D.,
Distinguished Service Chair

Established in 1981 by a group of former chairmen of the Trustees and special friends of the Medical Center to recognize permanently the vision, imagination, and personal dedication of James A. Campbell, M.D., president of the Medical Center from 1964 to 1983.

Muehrcke-Kark Chair of Nephrology

Established in 1981, this Chair honors Robert M. Kark, M.D., Professor of Medicine at Rush Medical College, who is known for his pioneer work with renal biopsies and his dedication to the education of young physicians. It also honors the family of his former student, Robert C. Muehrcke, M.D., whose generous commitment initiated the Chair.

**George W. Stuppy, M.D.
Chair of Arthritis**

This Chair was established in 1987 through a bequest from Mr. and Mrs. Charles J. Roberts. It honors their special relationship with Dr. Stuppy as family friend and physician and his distinguished career of nearly 50 years as physician, scientist and teacher at the Medical Center.

**Alla V. and Solomon Jesmer
Chair of Gerontology and Geriatric
Medicine**

This Chair was established in 1988 through a bequest of Solomon Jesmer, as a tribute to his late wife and to the care both received at the Johnston R. Bowman Health Center for the Elderly, and with the hope of advancing research and education in the fields of gerontology and geriatric medicine.

**John W. Curtin, M.D.
Chair in Plastic and Reconstructive
Surgery**

TEstablished in 1989 through the efforts of Mr. and Mrs. William A. Thomas, Sr., and other patients, friends and colleagues, to honor the long-time chairman of the Plastic and Reconstructive Surgery Department.

The following also represents a major endowment:

**The William Noble Lane
Medical Research Organization**

This, the first Medical Research Organization in the Midwest and the second in the nation, honors the memory of William Noble Lane, distinguished civic leader and entrepreneur. It was established in 1980 by the William Noble Lane Foundation to engage in medical research in conjunction with a hospital. Principal Investigator:

Eugene J-M. A. Thonar, Ph.D.
Associate Professor of
Biochemistry

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Rush University Affiliations

Affiliated Colleges

Beloit College, Beloit, Wisconsin

Carleton College, Northfield, Minnesota

Colorado College, Colorado Springs,
Colorado

Cornell College, Mount Vernon, Iowa

Fisk University, Nashville, Tennessee

Grinnell College, Grinnell, Iowa

Illinois Benedictine College, Lisle, Illinois

Illinois Institute of Technology, Chicago,
Illinois

Knox College, Galesburg, Illinois

Lake Forest College, Lake Forest, Illinois

Lawrence University, Appleton, Wisconsin

Macalester College, St. Paul, Minnesota

Monmouth College, Monmouth, Illinois

North Central College, Naperville, Illinois

Ripon College, Ripon, Wisconsin

Wheaton College, Wheaton, Illinois

Clinical Network

Bethany Hospital, Chicago, Illinois

Central DuPage Hospital, Winfield, Illinois

Christ Hospital and Medical Center, Oak
Lawn, Illinois

Elmhurst Memorial Hospital, Elmhurst, Illinois

Galesburg Cottage Hospital, Galesburg,
Illinois

Grant Hospital of Chicago, Chicago, Illinois

LaGrange Memorial Hospital, LaGrange,
Illinois

LaPorte Hospital, LaPorte, Indiana

MacNeal Hospital, Berwyn, Illinois

Marianjoy Rehabilitation Center, Wheaton,
Illinois

Mile Square Health Center, Inc., Chicago,
Illinois

St. Mary's Hospital, Streator, Illinois

Swedish Covenant Hospital, Chicago, Illinois

West Suburban Hospital Medical Center, Oak
Park, Illinois

Committees

Rush Medical College

Committees exist within the structure of Rush Medical College to assure the appropriate involvement of faculty and students in the various activities of the college. Except for the Rush Medical College Student Council, each committee includes representation from both faculty and students.

Faculty Council. The Faculty Council is the senior representative body within Rush Medical College. The membership includes nine professors, three associate professors, three assistant professors, three instructors or assistants, and one student from each class, each chosen by vote of the corresponding constituency.

Committee on Committees. The Committee on Committees has as its primary responsibility the nomination of individuals to serve on the various standing committees of the medical college. Sitting as the Committee on Dialogue, the committee is also responsible for dealing with grievances presented by members of the Rush Medical College community.

Student Council. The Student Council is the representative government for students of Rush Medical College and consists of six representatives from each of the four classes within the medical school. The council provides a mechanism to facilitate the exchange of information on matters affecting the student body.

The standing committees of Rush Medical College include:

Committee on Academic Freedom. This committee concerns itself with questions of academic freedom. It works closely with the Committee on Dialogue and the Faculty Council in resolving grievances involving questions of academic freedom.

Committee on Admissions. Members of this committee are responsible for recommending to the dean students for admission to the medical college. The duties of the committee members include selecting those applicants who will be interviewed; interviewing candidates; choosing applicants who will be offered acceptances to the medical college; and reviewing criteria

applied from medical student admissions to maintain academic excellence.

Committee on Affirmative Action. The Committee on Affirmative Action serves to advise the dean and the faculty regarding policies, procedures and issues that affect the recruitment, retention and promotion of minority and women faculty and students in the college. The committee works closely with the equal opportunity coordinator for academic affairs.

Curriculum Committee. The Curriculum Committee is responsible for the design and content of the curriculum. On the basis of its own surveys and the evaluations of the Committee on Educational Appraisal, this committee evaluates the need for and, as deemed appropriate, develops recommendations for curricular modification.

Committee on Educational Appraisal. The Committee on Educational Appraisal is responsible for evaluating the courses of Rush Medical College. The committee administers, with the assistance of each course director, and analyzes course, clerkship and faculty assessments provided by students. An annual report is produced for each course within the medical college curriculum.

Committee on Educational Resources. The principal function of the Committee on Educational Resources is to evaluate the utilization, organization and effectiveness of the sections of the Center for Educational Resources as they relate to the faculty and students of the medical college.

Committee on Senior Faculty Appointments and Promotions. The function of the Committee on Senior Faculty Appointments and Promotions (COSFAP) is to review recommendations submitted by chairmen for appointments or promotions of faculty members to academic ranks of indefinite terms in Rush Medical College. Recommendations for appointments or promotions are then submitted to the Office of the Dean for further action.

Committee on Student Affairs. The Committee on Student Affairs (COSA) is concerned with noncurricular needs of medical students. Its regular responsibilities include an annual evaluation of the effectiveness and adequacy of programs and services available to students, improvement of current programs, and initiation of new activities when their need is recognized. The

committee works closely with the University Office of Student Services.

Committee on Student Evaluation and Promotion. The Committee on Student Evaluation and Promotion (COSEP) is responsible for developing policies concerning student status, evaluation, and promotion; reviewing the academic performance of medical college students; making recommendations to the Faculty Council and dean concerning promotion, graduation, and dismissal of students; and determining requirements for remedial action for students who have failed medical college courses.

Committee on Student Judiciary Review.

It is the responsibility of the Committee on Student Judiciary Review to develop and recommend to the Faculty Council policies and procedures which promote the maintenance of ethical and professional standards for Rush Medical College students and to investigate and adjudicate charges of student misconduct of a nonacademic nature including, but not limited to: violations of commonly accepted ethical standards of an academic community, such as cheating and plagiarism; falsification of student records, transcripts, financial aid forms, or applications; unlawful use or possession of controlled substances on the Medical Center campus; conviction of a crime deemed serious enough to render the student unfit to pursue his/her profession or other conduct which is inconsistent with generally accepted standards of behavior within an academic community or the medical profession. All charges of student misconduct of a nonacademic nature shall be presented to the associate dean for medical student programs by students or faculty. The committee shall submit its recommendation to the Faculty Council, which, in turn, shall make a recommendation to the dean who will then render a final, nonappealable decision on the charges.

College of Nursing

Faculty Senate. The Faculty Senate is the governing body for the faculty and operates as the Committee on Committees. The senate has nine members representing each academic rank level, as well as members from the faculty-at-large. Members of this body are elected annually and the senate elects its own chairman. Two student representatives also serve on the senate.

The standing committees of the College of Nursing assist with the work of the college. Members of the committees are elected by the total faculty every June. The committees include:

Committee on Admissions. This committee is responsible for maintaining the admission standards and policies for all nursing programs. There are five members on this committee plus one student representative.

Committee on Progressions. This committee is responsible for maintaining the progression standards and policies for all nursing programs. There are six members on this committee plus one student representative.

Curriculum. This committee serves as the monitoring resource for the curriculum. The committee reviews all new courses and/or major changes in the curriculum, establishes and monitors methodology for curriculum evaluation and provides overall consistency for curriculum development. There are five members on this committee plus one student representative.

Affirmative Action. This committee is involved with the recruitment and retention of students and faculty from minority groups and data collection and research in relation to affirmative action activities and progress. There are six members on this committee including one student representative.

Educational Resource. This committee deals with the educational resource needs of the College of Nursing and provides liaison with the University Educational Resource Committee. There are seven members on this committee including two student representatives.

Faculty Appointments and Promotions Committee. This committee acts upon the appointments and promotions of faculty in accordance with the Rules of Governance. There are five members on this committee.

Faculty Development Committee. This committee is responsible for the design and implementation of programs to promote the growth and development of faculty. There are six members on this committee including a student representative.

College of Health Sciences

College Council. The senior representative governing body of the College of Health Sciences is the College Council. The College Council membership is comprised of both faculty members and students. The dean of the college serves as chairman. Faculty members represent all departments.

Senior Faculty Appointments and Promotions. This committee reviews applications for faculty appointments and promotions to associate professor and professor and makes recommendations to the College Council and dean in accordance with the Rules for Governance.

The Graduate College

The Graduate College Council. The Graduate College Council is the senior representative body for The Graduate College. The committee is comprised of all division directors, three elected faculty-at-large representatives and two student representatives. The Graduate College Council is chaired by the dean of The Graduate College.

Some academic policies and procedures may differ in detail from one division to another; however, each division's program and regulations must be reviewed for approval by The Graduate College Council.



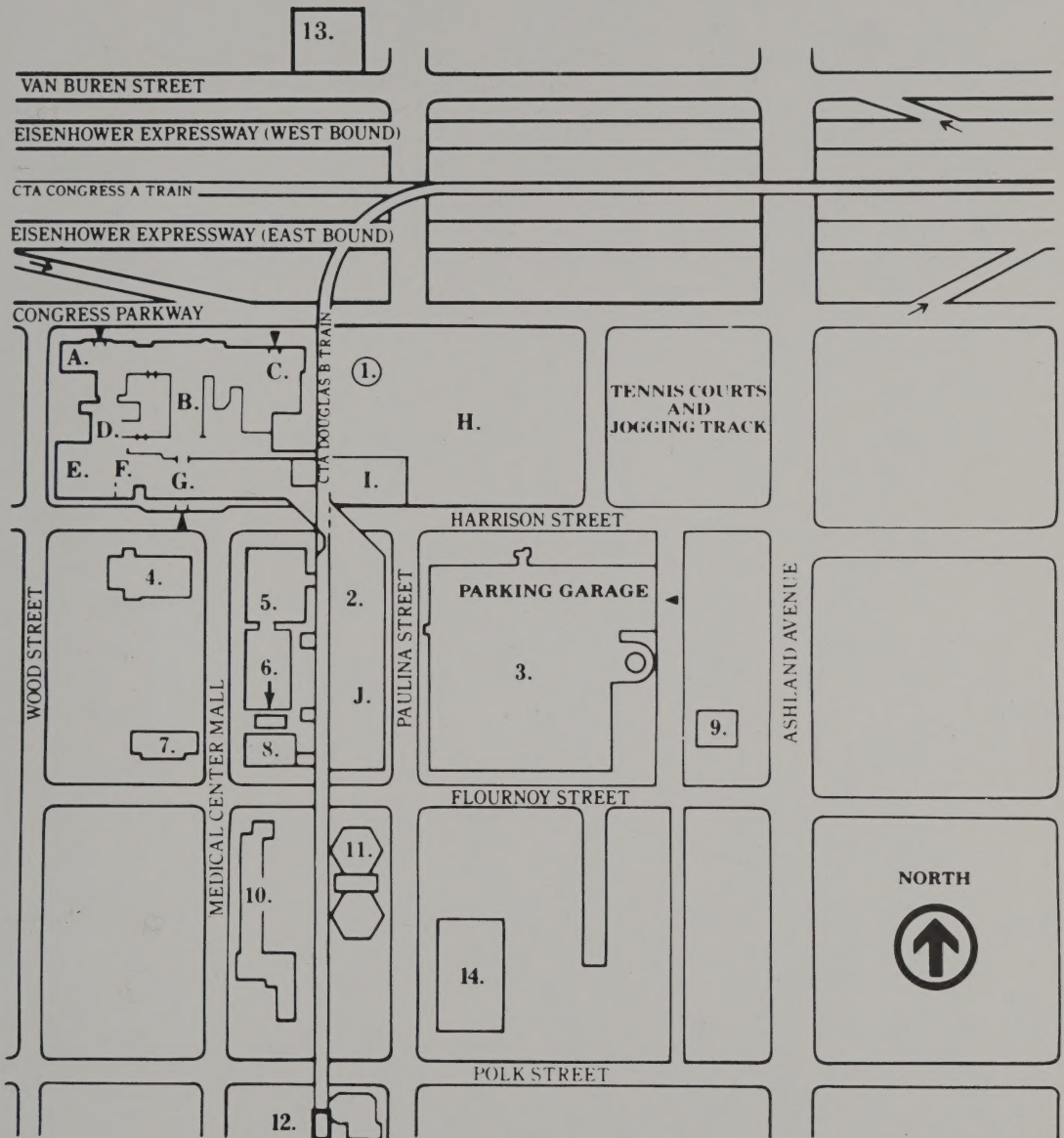
The Graduate Council is the governing body of the College. The Graduate Council is composed of representatives of the faculty, students, and staff. The council is responsible for the overall management of the College and for the approval of all major policies and programs. The council meets regularly to discuss and decide on matters of importance to the College.

The Graduate Council is composed of representatives of the faculty, students, and staff. The council is responsible for the overall management of the College and for the approval of all major policies and programs.

College of Health Sciences is one of the four colleges of the University. The college is responsible for the education and training of students in the health sciences. The college is composed of several departments, including the Department of Health, Behavior, and Society, the Department of Health, Education, and Behavior, and the Department of Health, Law, and Ethics. The college is also responsible for the research and development of new health technologies and services.



Rush Presbyterian-St. Luke's Medical Center Rush University Campus



1. Presbyterian-St. Luke's Hospital

- A. Jones
- B. Pavilion
- C. Kellogg Pavilion
- D. Murdock
- E. Rawson
- F. Senn
- G. Jelke SouthCenter
- H. Atrium Building
- I. Women's Board
- Cancer Treatment Center

2. Academic Facility

- J. Employee and Student Cafeteria

3. Parking Garage

- 4. Schweppe-Sprague Hall
- 5. Professional Building
- 6. Parcourse Fitness Cluster
- 7. Kidston Apartments
- 8. McCormick Apartments
- 9. Laurance Armour Day School
- 10. Marshal Field IV Mental Health Center
- 11. Johnston R. Bowman Health Center for the Elderly
- 12. Polk Street Station, CTA (B Line)
- 13. Van Buren Office Building
- 14. Human Resources Center for Employee Development

